Aircraft Service Manual

Service Schedule

Inspection Schedule

Engine Instruction & Maintenance Manual

Propeller Instruction Manual

Airworthiness Limitations

- Mandatory Replacement Times
- Structural Inspection Intervals
- Structural Inspection Procedures

FOREWORD

This manual contains JABIRU recommended procedures and instructions for ground handling, servicing and maintaining. The following Jabiru aircraft models:

J160	-	Jabiru 2200 powered
J170	-	Jabiru 2200 powered

In Australia, either model may be registered either by CASA in the general aviation category as a “VH” prefix & have a MTOW of **540kg** or the AUF in the Ultralight category as a “19” prefix & have a MTOW of **540kg**. In countries other than Australia, other registration requirements will apply.

It is the owner’s responsibility to become fully aware of the particular maintenance requirements and limitations applicable to the appropriate registration.

The information in this manual is based upon data available at the time of publication, and is supplemented and kept current by Service Bulletins & Service Letters published by JABIRU AIRCRAFT Pty Ltd. These are posted on the JABIRU website or your local dealer of Distributor (as recorded by JABIRU) so that they have the latest authorised recommendations for servicing the aircraft. New owners of pre-owned aircraft should ensure that the transfer of their aircraft has been advised to JABIRU AIRCRAFT Pty Ltd or your local dealer of distributor. Existing owners should ensure that their postal address remains current.

In addition to the information in this Service Manual, vendor publications will periodically be available from JABIRU which describe disassembly, overhaul and parts breakdown of some of the various vendor equipment items. A listing of the available publications is issued from time to time in service letters.

IMPORTANT

All maintenance should be undertaken with careful regard for the procedures outlined in this manual. A detailed record of maintenance undertaken should be recorded in the Aircraft Log Books.

In the interests of product development, we encourage owners to make suggestions related to design improvements. However, the final decision on their adoption or otherwise rests with JABIRU AIRCRAFT Pty Ltd.

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2 Section 2 – Service Manual

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Page	Revision	Date	Page	Revision	Date	Page	Revision	Date
1	0	25/7/05	56	0	25/7/05	111	0	25/7/05
2	0	25/7/05	57	0	25/7/05	112	0	25/7/05
3	0	25/7/05	58	0	25/7/05	113	0	25/7/05
4	0	25/7/05	59	0	25/7/05	114	0	25/7/05
5	0	25/7/05	60	0	25/7/05	115	0	25/7/05
6	0	25/7/05	61	0	25/7/05	116	0	25/7/05
7	0	25/7/05	62	0	25/7/05	117	0	25/7/05
8	0	25/7/05	63	0	25/7/05	118	0	25/7/05
9	0	25/7/05	64	0	25/7/05	119	0	25/7/05
10	0	25/7/05	65	0	25/7/05	120	0	25/7/05
11	0	25/7/05	66	0	25/7/05	121	0	25/7/05
12	0	25/7/05	67	0	25/7/05	122	0	25/7/05
13	0	25/7/05	68	0	25/7/05	123	0	25/7/05
14	0	25/7/05	69	0	25/7/05	124	0	25/7/05
15	0	25/7/05	70	0	25/7/05	125	0	25/7/05
16	0	25/7/05	71	0	25/7/05	126	0	25/7/05
17	0	25/7/05	72	0	25/7/05	127	0	25/7/05
18	0	25/7/05	73	0	25/7/05	128	0	25/7/05
19	0	25/7/05	74	0	25/7/05	129	0	25/7/05
20	0	25/7/05	75	0	25/7/05	130	0	25/7/05
21	0	25/7/05	76	0	25/7/05	131	0	25/7/05
22	0	25/7/05	77	0	25/7/05	132	0	25/7/05
23	0	25/7/05	78	0	25/7/05	133	0	25/7/05
24	0	25/7/05	79	0	25/7/05	134	0	25/7/05
25	0	25/7/05	80	0	25/7/05	135	0	25/7/05
26	0	25/7/05	81	0	25/7/05	136	0	25/7/05
27	0	25/7/05	82	0	25/7/05	137	0	25/7/05
28	0	25/7/05	83	0	25/7/05	138	0	25/7/05
29	0	25/7/05	84	0	25/7/05	139	0	25/7/05
30	0	25/7/05	85	0	25/7/05	140	0	25/7/05
31	0	25/7/05	86	0	25/7/05	141	0	25/7/05
32	0	25/7/05	87	0	25/7/05	142	0	25/7/05
33	0	25/7/05	88	0	25/7/05	143	0	25/7/05
34	0	25/7/05	89	0	25/7/05	144	0	25/7/05
35	0	25/7/05	90	0	25/7/05	145	0	25/7/05
36	0	25/7/05	91	0	25/7/05	146	0	25/7/05
37	0	25/7/05	92	0	25/7/05	147	0	25/7/05
38	0	25/7/05	93	0	25/7/05	148	0	25/7/05
39	0	25/7/05	94	0	25/7/05	149	0	25/7/05
40	0	25/7/05	95	0	25/7/05	150	0	25/7/05
41	0	25/7/05	96	0	25/7/05	151	0	25/7/05
42	0	25/7/05	97	0	25/7/05	152	0	25/7/05
43	0	25/7/05	98	0	25/7/05	153	0	25/7/05
44	0	25/7/05	99	0	25/7/05	154	0	25/7/05
45	0	25/7/05	100	0	25/7/05	155	0	25/7/05
46	0	25/7/05	101	0	25/7/05	156	0	25/7/05
47	0	25/7/05	102	0	25/7/05	157		
48	0	25/7/05	103	0	25/7/05	158		
49	0	25/7/05	104	0	25/7/05	159		
50	0	25/7/05	105	0	25/7/05	160		
51	0	25/7/05	106	0	25/7/05	161		
52	0	25/7/05	107	0	25/7/05	162		
53	0	25/7/05	108	0	25/7/05	163		
54	0	25/7/05	109	0	25/7/05	164		
55	0	25/7/05	110	0	25/7/05	165		

Issue Notes

2.2 GENERAL DESCRIPTION

The JABIRU J160 aircraft described in this manual are 2-seat, high-wing monoplane composite aircraft of monocoque construction. They are equipped with fixed tricycle landing gear of composite construction. The steerable nose gear is a welded metal, trailing link assembly with rubber springs.

The aircraft is equipped with JABIRU, 4 cylinder, 4 stroke engines driving a wooden fixed pitch propeller.

2.3 AIRCRAFT SPECIFICATIONS

Leading particulars of this aircraft, with dimensions based on gross weight, are given in Figure 1-1. If these dimensions are used for constructing a hangar or computing clearances, remember that such factors as tyre pressure, tyre size and load distribution may result in some dimensions that may be somewhat different from those listed.

2.4 CENTRE OF GRAVITY LIMITATIONS

The JABIRU is a very light aircraft. The installation of equipment may significantly alter the approved CG limits of the aircraft. Therefore, all proposed fixed installations must be approved by JABIRU AIRCRAFT Pty Ltd.

2.5 TORQUE VALUES

A chart of recommended torque values is shown in Figure 1-2. These torque values are recommended for all service procedures contained in this manual, except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

2.6 AIRCRAFT SPECIFICATIONS

Table 1. J160 Specifications

Model	J160-A	J160-C
Aircraft Maximum Weight	540kg (1190lb)	540kg (1190lb)
Fuel Capacity	135 litres	135 litres
Fuel Type	AVGAS 100/130. MOGAS with Octane Rating 95 RON or above may be used if AVGAS is not available. Fuels Containing Alcohols (Ethanol etc) will damage the fuel tank sealant and **MUST NOT BE USED IN JABIRU AIRCRAFT**	
Oil Capacity	2.3 litres	2.3 litres

Model	J160-A	J160-C
Oil Type	Refer Engine Manuals	Refer Engine Manuals
Engine Model (Refer To Appendix I For Engine Data)	Jabiru 2200	Jabiru 2200
Propeller Type	Jabiru 2-bladed Wooden	Jabiru 2-bladed Wooden
Propeller Diameter	60” dia (1524mm)	60” dia (1524mm)
Propeller Pitch	Jabiru 44” pitch (1117mm)	Jabiru 42” pitch (1067mm)
Wheel Sizes Standard	500 x 6” rim	500 x 6” rim
Tyres Standard	6” wide, 6 Ply	6” wide, 6 Ply
Tyre Pressures Standard - Mains	179 kpa (26 psi)	179 kpa (26 psi)
Tyre Pressures Standard - Nose	137 kpa (20 psi)	137 kpa (20 psi)
Wheel Alignment (At Gross Weight) Camber Toe In	 0” 0”	 0” 0”
Battery Location	In Engine Compartment	In Engine Compartment

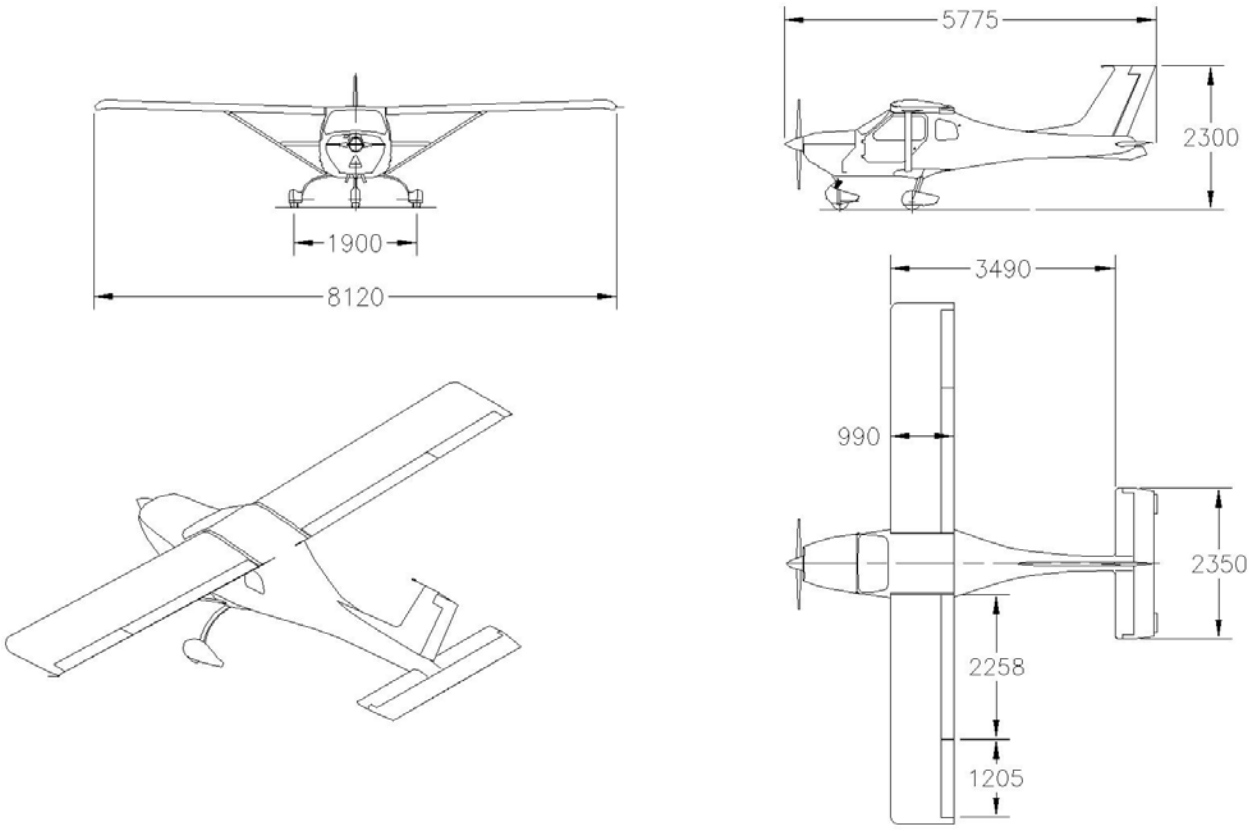


Figure 1. J160 General Arrangement

Table 2. J170 Specifications

Model	J170-A (Aust Kit)	J170-UL (Europe Kit)	J170-SP (USA LSA)	J170-SPC (Canada LSA)
Aircraft Maximum Weight	540kg (1190lb)	450kg (992lb)	540kg (1190lb)	540kg (1190lb)
Fuel Capacity	135 litres	75 litres	135 litres	135 litres
Fuel Type	AVGAS 100/130. MOGAS with Octane Rating 95 RON or above may be used if AVGAS is not available. Fuels Containing Alcohols (Ethanol etc) will damage the fuel tank sealant and **MUST NOT BE USED IN JABIRU AIRCRAFT**			
Oil Capacity	2.3 litres	2.3 litres	2.3 litres	2.3 litres
Oil Type	Refer Engine Manuals	Refer Engine Manuals	Refer Engine Manuals	Refer Engine Manuals
Engine Model (Refer To Appendix I For Engine Data)	Jabiru 2200	Jabiru 2200	Jabiru 2200	Jabiru 2200
Propeller Type	Jabiru 2-bladed Wooden	Jabiru 2-bladed Wooden	Jabiru 2-bladed Wooden	Jabiru 2-bladed Wooden
Propeller Diameter	60” dia (1524mm)	60” dia (1524mm)	60” dia (1524mm)	60” dia (1524mm)
Propeller Pitch	Jabiru 44” pitch (1117mm)	Jabiru 42” pitch (1067mm)	Jabiru 44” pitch (1117mm)	Jabiru 44” pitch (1117mm)
Wheel Sizes Standard	500 x 6” rim	400 x 4” rim	500 x 6” rim	500 x 6” rim
Tyres Standard	6” wide, 6 Ply	4” wide, 4 ply	6” wide, 6 Ply	6” wide, 6 Ply
Tyre Pressures Standard - Mains	179 kpa (26 psi)	179 kpa (26 psi)	79 kpa (26 psi)	79 kpa (26 psi)
Tyre Pressures Standard - Nose	137 kpa (20 psi)	137 kpa (20 psi)	137 kpa (20 psi)	137 kpa (20 psi)
Wheel Alignment (At Gross Weight) Camber Toe In	 0” 0”	 0” 0”	 0” 0”	 0” 0”
Battery Location	In Engine Compartment	In Engine Compartment	In Engine Compartment	In Engine Compartment

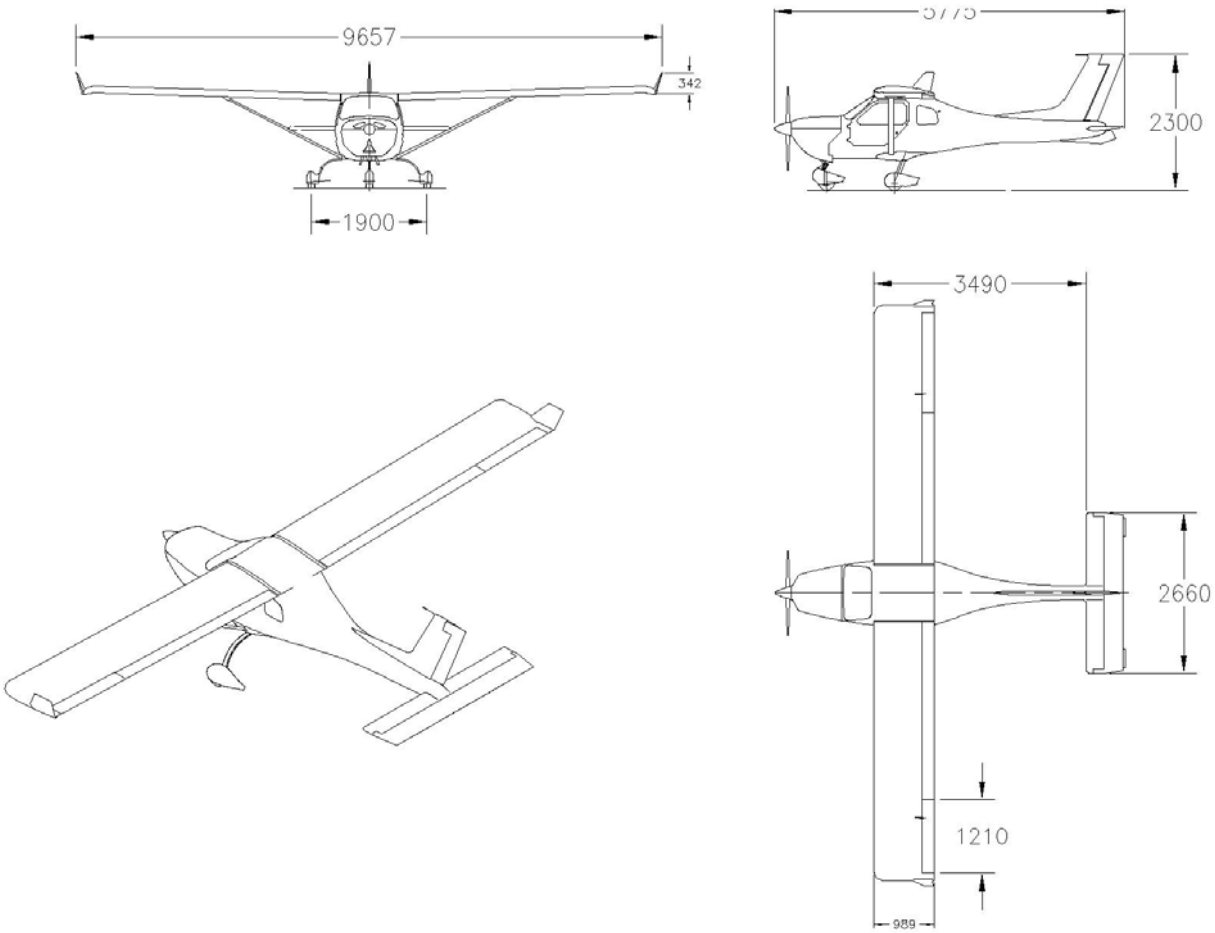


Figure 2. J170 General Arrangement

2.7 RECOMMENDED TORQUE VALUES (IN FIBREGLASS)

Table 3. Recommended Bolt Torque Values

BOLT SIZE	TORQUE (INCH.LB)
AN3	20 - 25 (2 FT LB)
AN4	50 - 70 (4-5 FT LB)
AN5	100 –140 (8-12 FT LB)
AN4 PROPELLOR	72 (6 FT LB)

- These values relate only to steel nuts on oil-free cadmium plated threads.
- For Engine Bolt Torque Values see Engine Instruction & Maintenance Manual.
- The above values are recommended for all installation procedures contained in this Manual, except where other values are stipulated.
- The above values are not to be used for checking tightness of installed parts during service.

CAUTION

GENERAL RULE: DO NOT REUSE SELF-LOCKING NUTS

3 Section 3 - Ground Handling, Servicing, Lubrication & Inspection

3.1 GROUND HANDLING

3.1.1 TOWING

The JABIRU aircraft is very light and should always be moved by hand.

Moving the aircraft is accomplished by using the wing struts or prop hub or landing gear struts as push points together with the solid rear fuselage join of the fin to the tail plane.

CAUTION

Do not use control surfaces to move the aircraft --Damage to the control system may result

When pushing at the join of the fin and Tail Plane, take care that you do not jam your fingers under the rudder or in the rudder hinge – remember that it is Connected to the Nose Wheel.

CAUTION

When moving the aircraft, never turn the Nose Wheel more than 15 degrees either side of centre or Nose Gear may be damaged.

The aircraft may also be moved by placing the propeller in the horizontal and then placing one hand on the propeller on either side of the spinner. The aircraft can then be pulled forward and nose wheel lifted off the ground if necessary.

CAUTION

Never move the aircraft in this manner whilst the engine is hot as it may fire when the propeller is moved and result in severe injury!

Always ensure that the Master and Ignitions are OFF!

Never approach the propeller when anyone is in the aircraft.

Always treat the propeller as LIVE! IT KILLS!

3.1.2 JACKING

JABIRU is a very light aircraft. Before jacking, ensure that it is as light as possible by removing luggage and any unnecessary fuel.

3.1.2.1 JACKING MAIN GEAR

1. Remove main gear spat on the side to be jacked or both spats if both wheels to be jacked.

2. The aircraft can be lifted on one side by a person of reasonable strength (or 2 of lesser strength) by lifting on the Wing Spar, at the outboard part of the wing strut attachment or towards the wing tip. Be careful lifting at the Wing Tip.

3. Place a solid block (preferably wood) under the bottom of the composite glass leg which will result in the wheel being off the ground when the aircraft is lowered. Be careful not to interfere with brake components or Wheel Spat attachments.

4. Repeat for other side if necessary.

The above procedure is useful for wheel/brake servicing or repairs, but is of no value in removing the main undercarriage. If the removal of the main undercarriage is necessary, adopt the following procedure.

1. Obtain a trestle, 20ltr drum or similar object 600mm high.

2. Mount a solid foam block, sandbag, pillow or similar compliant material on top of the trestle. (compliant material should distribute load over minimum 150 square centimetres) Place under the lower wing strut attachment.

3. Support under both wings at the Wing Spar to prevent the aircraft from rocking. Ensure that no fittings are strained.

3.1.2.2 JACKING NOSE GEAR

1. Push down on tail Plane (NOT THE ELEVATOR) until nose gear is off the ground.

2. Place trestle or drum under rear fuselage together with absorbent material such as foam block, sandbags or a pillow.

CAUTION

Ensure trestle does not foul Ventral Fin.

3. Weigh down tail plane with sandbags or similar heavy absorbent (not hard – hard items like bricks are likely to damage the aircraft) material.

CAUTION

Do not lift using control surfaces. Damage to the control surface or control system may result.

3.1.3 HOISTING

This procedure should not be necessary for most service or maintenance procedures. Should hoisting be necessary:

1. Drain Fuel from both wings & Remove wings. See details below

2. Fit shackles to wing support brackets (4 off).

3. Fit cables/rope to shackles and to a centre lift shackle.

4. Hoist only from this point ensuring that cables/ropes do not mark the top of the fuselage at corners above wing support brackets.

3.1.4 LEVELLING

Method 1
For both lateral and longitudinal levelling use a spirit level on either side of the lower door sills.

Method 2
Use the join line of the cowl top & bottom halves.

3.1.5 PARKING

Parking precautions depend principally on local conditions. As a general precaution, check the wheels and tie the control handle back firmly with a seat belt to lock the controls. Park into the wind and tie down the aircraft as outlined in below if a hangar is not available.

3.1.6 TIE DOWN

When mooring the aircraft in the open, head into wind if possible. Secure control surfaces by tying the control handle back firmly with a seat belt.

Then:
1. Tie ropes to the top end of each wing strut. Secure opposite end of the ropes to ground anchors located at approximately 30 degrees to the vertical, outboard of the top wing attachment point. Ensure that the ropes have sufficient slack to not strain the wing attachments should a tyre deflate while the aircraft is tied down.

2. Tie rope to the Tail Tie-down Hole in the Ventral Fin. Secure the opposite end of rope to ground anchors.

3.1.7 FLYABLE STORAGE

Flyable storage is defined as a maximum of 30 days non-operational storage.

Ensure that the engine has been stopped by turning off the fuel valve, thereby not leaving any fuel in the carburettor bowl.

Every 7th day the propeller should be rotated through 5 revolutions, without running the engine. Leave the propeller in the horizontal position to ensure even distribution of liquids in the wood. If left in the vertical position, liquids will drain to the lower tip resulting in an unbalanced propeller.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

Store under cover, away from direct sunlight as ultra-violet rays damage composite structures.

In addition, the Pitot tube, static air vent, air vents, openings in the engine cowl and other similar openings should have protective covers fitted to prevent entry of foreign materials and beings (especially wasps).

3.1.8 RETURNING AIRCRAFT TO SERVICE

After flyable storage, returning the aircraft to service is accomplished by performing a thorough pre-flight inspection. Ensure all protective covers are removed.

3.1.9 TEMPORARY OR INDEFINITE STORAGE

Temporary storage is defined as aircraft in non-operational status for a maximum of 90 days.

Treat as for flyable storage (see Paragraph 2.1.7), plus:

- For temporary storage, fill fuel tank with correct grade of gasoline (to prevent moisture accumulation).

- For indefinite storage, drain fuel tank, ensure carburettor bowl is empty by running engine with fuel valve off until it stops or by draining bowl.

Then:

1. Clean aircraft thoroughly.

2. Clean any dirt, oil or grease from tyres and coat tyres with a tyre preservative. Cover tyres to protect against dirt and oil.

3. Either block up undercarriage/fuselage to relieve pressure on tyres or rotate wheels every 30 days to prevent flat spotting the tyres.

4. Seal or cover all openings.

5. Remove battery and store in a cool dry place. Service the battery periodically and charge as required.

   NOTE: It is recommended that a battery which is not used should be charged every 30 days.

6. Disconnect spark plug leads and remove spark plugs from each cylinder. Using an oil can or spray atomiser, spray preservative oil through a spark plug hole of each cylinder with the piston in the down position.

   NOTE: Use shell Aero fluid 2UN (MIL-C-6529C Type 1) or similar engine corrosion inhibitor.

Rotate the propeller 10 – 12 times, leaving it in the horizontal position.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

7. Install spark plugs and connect leads.

8. Seal exhaust pipes. Attach a red streamer to each. DO NOT seal fuel tank breathers.

9. Place protective covers over pitot tube, static source vents, air vents and openings in engine cowl to prevent the entry of foreign material or beings (especially wasps).

10. Attach a warning placard to the propeller stating that vents and breathers have been sealed. The engine must not be started with the seals in place.

11. Every 7 days the propeller should be rotated through 5 revolutions without running the engine – leave propeller in the horizontal position.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

3.1.10 INSPECTION DURING STORAGE

1. Generally inspect airframe and clean as necessary.

2. Inspect the interior of at least one cylinder through the spark plug hole for corrosion at least once a month.

3. If, at the end of the 90 day period, the aircraft is to be continued in non-operational storage – repeat Steps 1-13 above (most will only need to be checked).

3.1.11 RETURNING AIRCRAFT TO SERVICE

After temporary storage, the procedures for returning the aircraft to service are as follows:

1. Remove aircraft from blocks and check tyres for proper inflation.

2. Check battery and install.

3. Check carburettor air filter and service if necessary.

4. Remove warning placard from propeller.

5. Remove materials used to cover openings.

6. Remove, clean and gap spark plugs.

7. While spark plugs are removed, rotate propeller several revolutions to clear excess preservative oil from cylinders.

CAUTION

Ensure that the Master and Ignition Switches are OFF!

8. Install spark plugs – torque to 20 nm (180 inch/lbs).

9. Check fuel filter – replace if necessary.

10. Check brake fluid level.

11. If returning to service after indefinite storage, fill fuel tanks with correct grade of fuel.

12. Check fuel tank and fuel lines for moisture and sediment. Drain enough fuel to eliminate any moisture and sediment.

13. Check fuel tank breather is clear.

14. Perform a thorough pre-flight inspection.

15. Start and warm engine.

3.2 SERVICING

Servicing requirements are shown in the service table below. The following paragraphs supplement this table by adding details not included.

Note that Inspection Requirements are detailed at Paragraph 3.5.

3.2.1 SERVICING SCHEDULE

3.2.1.1 PRE-FLIGHT:

- Refer to Flight Manual

3.2.1.2 25 HOUR SERVICE

- Refer to Engine Instruction & Maintenance Manual

3.2.1.3 50 HOUR SERVICE

- Refer to Engine Instruction & Maintenance Manual

3.2.1.4 100 HOUR SERVICE

- Refer to Engine Instruction & Maintenance Manual

3.2.1.5 OTHER INSPECTION & MAINTENANCE PROCEDURES:

- Refer to Engine Instruction & Maintenance Manual.

- Replace flexible oil & fuel line in engine compartment every 2 years or when visible deterioration (cracking, hardening) occurs.

3.2.2 FUEL

The fuel tanks should be filled immediately after flight to lessen condensation of moisture. The tank capacity is listed in the Aircraft Specifications Above.

3.2.3 FUEL DRAIN

A fuel drain is located in the Left & Right hand fuel tanks near the wing root. Drain fuel after each refuelling to ensure moisture and contaminants are not present.

3.2.4 CARBURETTOR AIR FILTER

The Carburettor air filter keeps dust and dirt from entering the induction system. The value of maintaining the air filter in a good, clean condition cannot be overstressed. More engine wear is caused through the use of a dirty or damaged air filter than is generally believed. The frequency with which the filter should be removed, inspected and cleaned will depend on the operating conditions. A good general rule, however, is to remove, inspect and clean the filter ever 50 hours of engine operating time and more frequently if warranted by the operating conditions. Clean only with compressed air. Under extreme operating conditions, daily servicing of the filter is recommended.

3.2.5 BATTERY

The Battery is a gel type, and so is not a serviceable item. If electrolyte corrosion occurs, Use bicarbonate of soda (baking soda) and clean water to neutralise electrolyte of corrosion. Follow with a thorough flushing with clean water. Remove battery and clean residue from aircraft.

Tighten cable and terminal connections with a wire brush, then coat with petroleum jelly before connecting cables. Check the battery every 50 hours (or at least every 30 days), more often in hot weather. Inspect the Battery Box and attachments. Clean and remove any signs of spillage or corrosion.

3.2.6 TYRES

Maintain tyre pressure at the air pressure specified in Aircraft Specifications above. When checking tyre pressure, examine tyres for wear, cuts, bruises and slippage. Remove oil, grease and mud from tyres with soap and water.

NOTE: Recommended tyre pressures should be maintained, especially in cold weather. Remember that any drop in temperature of the air inside the tyre causes a corresponding drop in tyre pressure.

3.2.7 HYDRAULIC BRAKES

Check brake master cylinder and refill with automotive brake fluid **(DOT 3 or DOT 4)** Bleed the brake system of any trapped air whenever there is a spongy response on the brake lever.

Refer to paragraph 6.8 for filling and bleeding of the brake system.

CAUTION

The JABIRU uses automotive brake fluid(DOT 3 or DOT 4). DO NOT use Aircraft hydraulic fluid (mineral based) or damage to the brake system will result.

3.3 CLEANING

Keeping the aircraft clean is important. Besides maintaining the appearance of the aircraft, cleaning makes inspection and maintenance easier.

3.3.1 WINDSHIELD AND WINDOWS

These should be cleaned carefully with plenty of fresh water and a mild detergent, using the palm of the hand to feel and dislodge any caked dirt or mud. A sponge, soft cloth or chamois may be used but only as a means of carrying water to the plastic. Rinse thoroughly then dry with a clean, moist chamois. DO NOT rub the plastic with a dry cloth as this builds up an electrostatic charge, which attracts dirt. Oil and grease may be removed by using a soft cloth moistened with mineral turpentine.

CAUTION

DO NOT use gasoline, alcohol, Buzene, Acetone, Carbon Tetrachloride, fire extinguisher fluid, de-icer fluid, lacquer thinner or glass window cleaning spray.
These solvents will soften and craze the Plastic.
DO NOT use a canvas cover on the windshield or windows as the cover may scratch the plastic.

3.3.2 INTERIOR SURFACES

Interior surfaces should be cleaned with a soft cloth, fresh water and a mild detergent. Volatile substances such as those mentioned in the previous section must never be used.

3.3.3 EXTERIOR SURFACES

The exterior surfaces, under normal conditions, require a minimum of polishing and buffing.

CAUTION

DO NOT polish or buff the aircraft within the first 2 weeks after delivery from the factory as surface treatments take up to 14 days to properly cure.

Generally, the exterior surfaces can be kept bright by washing with water and a mild soap or detergent, followed by a rinse with water and drying with a cloth or a chamois.

Remove stubborn oil and grease with a cloth moistened with mineral turpentine, then wash with water and a mild soap, rinse and dry as stated before.

After the curing period the aircraft may be waxed with a good quality automobile wax. A heavier coating of wax on the leading edges of the wing, tail and on the engine nose cap will help reduce abrasion encountered in these areas.

CAUTION

DO NOT use Silicon based cleaning materials as Silicon is absorbed into the composite Materials and may affect reparability.

3.3.4 ALUMINIUM SURFACES

The aluminium surfaces require a minimum of care, but should not be neglected. Wash and clean as detailed in paragraph 3.3.3 above.

CAUTION

JABIRU aircraft are designed for minimum maintenance. **However, special attention should be applied when the aircraft has been used in extremely corrosive conditions, e.g. beach landings with sand and salt. Always ensure the aircraft is thoroughly hosed and washed immediately after such use**. Pay particular attention to wheels and external controls. Always hose down wheels and spats after landings in mud or sand to ensure brakes, wheels and spats are free of dirt build-up.

3.3.5 ENGINE AND ENGINE COMPARTMENT

The engine should be kept clean since dirty cooling fins and baffles can cause overheating of the engine. Also, cleaning is essential to minimise any danger of fire and provide easy inspection of components.

CAUTION

DO NOT hose engine. Electrical components may be damaged by moisture. Ensure electrical components are protected against moisture. Caustic cleaning solutions should not be used.

Recommended cleaning procedure is lightly spray with degreasing fluid – after sealing coils and starter motor. WIPE clean with brush and cloth.

3.3.6 PROPELLER

Wash with soap and water, rinse with clean water and dry with cloth or chamois. **Do not use a wax based substance as this would make it almost impossible to refurbish the prop if need at a later stage.**

3.3.7 WHEELS

The wheels should be washed periodically and examined for corrosion, cracks or dents in the wheel halves or in the flanges or hubs. If defects are found, remove and repair in accordance with Section 6. Discard cracked wheel halves, flanges or hubs and install new parts.

3.4 LUBRICATION

There are no lubrication requirements for the JABIRU other than those detailed in Appendix 1.

3.4.1 WHEEL BEARING – MAINS AND NOSE

At each 100 hour inspection, jack the wheel, spin the wheel and check for free running and any play on the shaft. Remove and replace if there is any sign of binding or wear.

3.5 2.5 INSPECTION

3.5.1 INSPECTION CHARTS

The chart at Paragraph 3.5.2 shows the recommended intervals at which items are to be inspected.

As shown in the chart, there are items to be inspected each 50 hours, each 100 hours and each 200 hours. There are also special inspection items which require inspection of servicing at intervals other than 50, 100 and 200 hours.

The engine Instruction Manual also details engine inspection schedules and should be consulted in addition to this chart.

- When conducting an inspection at 50 hours, all items marked under EACH 50 HOURS would be inspected, serviced or otherwise completed as necessary to ensure continuous airworthiness.

- At each 100 hours, the 50 hours items would be completed in addition to the items marked under EACH 100 HOURS as necessary to insure continuous airworthiness.

- An inspection conducted at 200 hours would likewise include the 50 hour items and 100 hour items in addition to those at EACH 200 HOURS.

- A complete aircraft inspection includes all 50, 100 and 200 hour items together with those shown in the Engine Instruction Manual.

3.5.2 INSPECTION GUIDELINES

3.5.2.1 MOVEABLE PARTS

lubrication, servicing, security of attachments, binding, excessive wear, safety, proper operation, proper adjustment, correct travel, cracked fittings, security of hinges, defective bearings, cleanliness, corrosion, deformation, sealing and tension.

3.5.2.2 FLUID LINES AND HOSES

leaks, cracks, kinks, chafing, proper radius, security, corrosion, deterioration, obstruction and foreign matter.

3.5.2.3 METAL PARTS

security of attachment, cracks, metal distortion, broken welds, corrosion, and any other apparent damage.

3.5.2.4 WIRING

security, chafing, burning, defective insulation, loose or broken terminals, heat deterioration and corroded terminals.

3.5.2.5 BOLTS IN CRITICAL AREAS

correct torque in accordance with torque values given in the chart in Section 1, when installed or when visual inspection indicates the need for a torque check.

NOTE: Torque values listed in section 1 are derived from oil-free cadmium-plated threads, and are recommended for all installation procedures contained in this manual except where other values are stipulated. They are not to be used for checking tightness of installed parts during service.

3.5.2.6 FILTERS, SCREENS AND FLUIDS

cleanliness, contamination and/or replacement at specified intervals.

3.5.2.7 AIRCRAFT FILE

Various data, information and licenses are part of the aircraft file. Check that the following documents are up-to-date and in accordance with current Civil Aviation Authority Regulations. Most of the items listed are required by the Australian Civil Aviation Authority Regulations. Since the regulations of other nations may require other documents and data, owners of exported aircraft should check with their own aviation officials to determine their individual requirements.

To be displayed in the aircraft at all times:
- Placards as detailed in Flight Manual / Owner's Manual.

To be carried in the aircraft at all times:
- Flight Manual / Owner's Manual

To be made available on request:
- Aircraft Registration
- Radio Station License
- Pilot License/Certificate including Medical Certificate (if appropriate).

3.5.2.8 ENGINE RUN-UP

Before beginning the step-by-step inspection, start, run-up and shut-down the engine in accordance with instructions in the Flight Manual and Appendix 1 of this manual. During the run-up, observe the following, making note of any discrepancies or abnormalities:

1. Engine temperatures and pressures.

2. Static RPM. (Also refer to Engine Instruction Manual).

3. Magneto drop. (Also refer to Engine Instruction Manual).

4. Engine response to changes in power.

5. Any unusual engine noises.

6. Fuel shut-off valve; operate engine in ON position and in OFF position long enough to ensure shut-off functions properly.

7. Idling speed.

After the inspection has been completed, an engine run-up should again be performed to determine that any discrepancies or abnormalities have been corrected.

3.5.3 INSPECTION CHART

IMPORTANT

READ ALL INSPECTION RQUIREMENTS PRIOR TO USING THESE CHARTS.

Table 4. Inspection Chart

		Annual Inspection	Each 200 Hours	Each 100 Hours	Each 50 Hours	
PROPELLER						
1	Spinner			*		*
2	Spinner Flange			*		*
3	Spinner screws			*		*
4	Propeller			*		*
5	Propeller bolts/nuts - Tension					*
6	Spinner / Prop Tracking			*		*
ENGINE COMPARTMENT						
	Check for oil, fuel, exhaust & induction leaks, then clean entire engine & compartment before inspection.					
1	Carburetor air filter			*		*
2	Engine baffles and air ducts					*
3	Cylinders					*
4	Crankcase & front crankcase seal					*
5	Hoses, lines and fittings			*		*
6	Intake and exhaust systems					*
7	Ignition harness, distributor caps & rotors					*
8	Spark plugs			*		*

		Annual Inspection	Each 200 Hours	Each 100 Hours	Each 50 Hours	
9	Compression check or leak-down check			*		*
10	Electrical wiring					*
11	Fuel pump			*		
12	Engine controls and linkages			*		*
13	Engine mounts, mount structure			*		*
14	Starter, solenoid and electrical connections			*		*
15	Coils and electrical connections			*		*
16	Carburettor heat system			*		*
17	Throttle and linkage			*		*
18	Carburettor			*		*
19	Oil system tubes and hoses			*		*
20	Firewall					*
21	Engine cowlings and clips			*		*
22	Exhaust system – including muffler		*			*
23	Head bolt tension					*
24	Oil & filter change		*			*
25	SCAT hose condition			*		*
Fuel System						
1	Fuel filters, drain valves, carburetor bowl			*		*
2	Electronic fuel boost pump and fittings					*
3	Fuel lines and connectors			*		*

		Annual Inspection	Each 200 Hours	Each 100 Hours	Each 50 Hours
4	Fire sleeves		*		*
5	Fuel tank vents, caps & placards		*		*
6	Fuel Tanks		*		*
7	Fuel shut-off valve & placards		*		*
	Landing Gear				
1	Main gear wheels & fairings	*			*
2	Nose gear wheel, steering links, tension links & fairings	*			*
3	Wheel bearings		*		*
4	Nose gear strut	*			*
5	Nose gear housing & bushes			*	
6	Main gear struts, clamps, bolts & nuts	*			*
7	Tyres & tubes		*		*
8	Brake fluid, hoses, linings, discs, brake assemblies & master cylinder		*		*
9	Brake operational check	*			*
	Airframe				
1	Aircraft exterior		*		*
2	Aircraft structure		*		*
3	Windows, windshield, doors & seals		*		*
4	Seatbelts & shoulder harnesses		*		*
5	Seat structure		*		*
6	Instruments & markings		*		*

		Annual Inspection	Each 200 Hours	Each 100 Hours	Each 50 Hours
7	Instrument plumbing & wiring			*	*
8	Instrument panel, shock mounts, decals & labels				*
9	Ventilation system			*	*
10	Cabin upholstery, trim				*
11	Switches, fuses			*	*
12	Pitot & static system slips			*	*
13	Radio, intercom & headsets			*	*
14	Antenna & cable			*	*
15	Battery, battery cradle & cables			*	*
	Control Systems In addition to the items listed below, always check for correct direction of movement (particularly if controls have been disconnected) and correct travel				
1	Cables & clamps		*		*
2	Rod ends		*		*
3	Trim control & cable		*		*
4	Travel stops		*		*
5	Decals & labels		*		*
6	Flap control & linkages		*		*
7	Elevator control & linkages		*		*
8	Rudder pedals & linkages		*		*
9	Exterior surfaces of control surfaces		*		*

		Annual Inspection	Each 200 Hours	Each 100 Hours	Each 50 Hours	
10	Control horns, hinges & hinge lock tabs.		*			*

4 Section 4 - Fuselage

4.1 FUSELAGE

The Fuselage is a composite monocoque (self-supporting) structure and includes both the Horizontal Stabiliser and Vertical Fin.

All repairs must be referred to Jabiru Aircraft Pty Ltd or approved local representative.

4.2 WINDSHIELD AND WINDOWS

4.2.1 DESCRIPTION

The windshield and windows are one-piece acrylic plastic panels set in sealing strips with Epoxy Resin & Fibre Flock and secured to the fuselage with screws/nuts.

IMPORTANT

In the event of a bird strike, the windshield is the only protection for the crew and therefore must be maintained in excellent condition. Cracks up to 25 mm in length should be stop drilled; those longer than 25 mm should NOT be repaired – the windshield must be replaced.

4.2.2 CLEANING

Refer to Section 3.

4.2.3 WAXING

Waxing will fill in minor scratches in clear plastic and help protect the surface from further abrasion. Use a good grade of commercial wax (NOT SILICON BASED) applied in a thin, even coat. Bring wax to a high polish by rubbing lightly with a clean, dry flannel cloth.

CAUTION

Silicon based waxes and polish are not recommended as silicon may be absorbed into the glass fibre laminate and effect the reparability due to impairing bonding.

4.2.4 REPAIRS

Damaged window panels and windshield may be removed and replaced if damage is substantial. However, certain minor repairs as prescribed in the following paragraphs can be made successfully without removing the damaged part from the aircraft.

The procedure for repairing cracks is only recommended for low stress areas. No repairs of any kind are recommended on highly stressed or compound curved areas or where repair would be likely to affect the pilot's field of vision.

4.2.5 SCRATCHES

Scratches on clear plastic surfaces can be removed by hand buffing and polishing using Plastic Polish available from JABIRU as Part No.: NOVUS#2.

NOTE: Rubbing plastic surface with a dry cloth will build up an electrostatic charge which will attract dirt particles and may eventually cause scratching of the surface. After applying polish, dissipate this charge by rubbing surface with a slightly damp chamois. This will also remove dust particles which have collected while wax is hardening.

4.2.6 CRACKS

When a crack appears, drill a hole at the end of the crack to prevent further spreading. Hole should be approximately 1/16 inch in diameter, depending on length of crack and thickness of material. An unfluted drill should be used.

4.2.7 REMOVAL

As the windscreen and windows are bonded into the fuselage, it is not possible to remove them without destroying them. Once windows have been broken out, any screws used in the original installation should be removed.

4.2.8 INSTALLATION

1. Ensure all old epoxy resin has been removed from the fuselage sealing strips (around the window frames).

2. Check new windscreen for fit. File or grind away any excess material to ensure a close fit. Do not attempt to cut with any type of saw.

3. Wet the window frame joggle with raw epoxy resin. Apply a bead of Epoxy & Flock around the outer edge of the windscreen.

4. Place windscreen accurately over the sealing strips and locate with one screw top and bottom.

5. Fit other screws.

6. Take care not to crack windscreen when installing. DO NOT over tighten screws – cracking will result.

4.3 CABIN DOORS

4.3.1 REMOVAL AND INSTALLATION

Removal of doors is achieved by removing the hinge bolts or removing the machined screws that attach the hinges to the door frame. Refer to Figures 4 and 3 below.

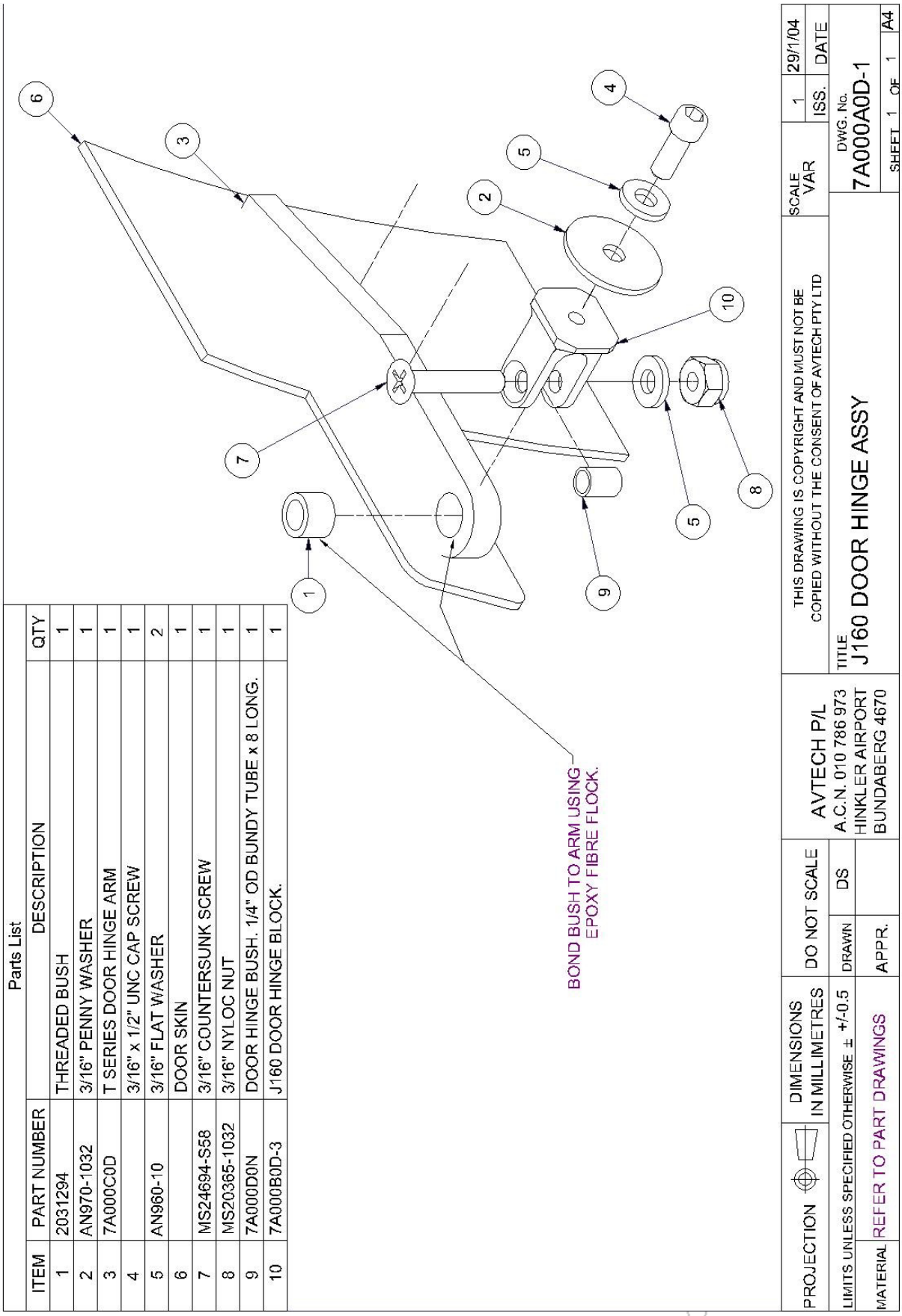

Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 2031294 | THREADED BUSH | 1
2 | AN970-1032 | 3/16" PENNY WASHER | 1
3 | 7A000C0D | T SERIES DOOR HINGE ARM | 1
4 | | 3/16" x 1/2" UNC CAP SCREW | 1
5 | AN960-10 | 3/16" FLAT WASHER | 2
6 | | DOOR SKIN | 1
7 | MS24694-S58 | 3/16" COUNTERSUNK SCREW | 1
8 | MS20365-1032 | 3/16" NYLOC NUT | 1
9 | 7A000D0N | DOOR HINGE BUSH. 1/4" OD BUNDY TUBE x 8 LONG. | 1
10 | 7A000B0D-3 | J160 DOOR HINGE BLOCK. | 1
BOND BUSH TO ARM USING EPOXY FIBRE FLOCK.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE ± +/-0.5
DRAWN DS
APPR.
MATERIAL REFER TO PART DRAWINGS
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
TITLE
J160 DOOR HINGE ASSY
SCALE VAR
DWG. No. 7A000A0D-1
ISS. 1 DATE 29/1/04
SHEET 1 OF 1 A4

Figure 3. Door Hinge Assy

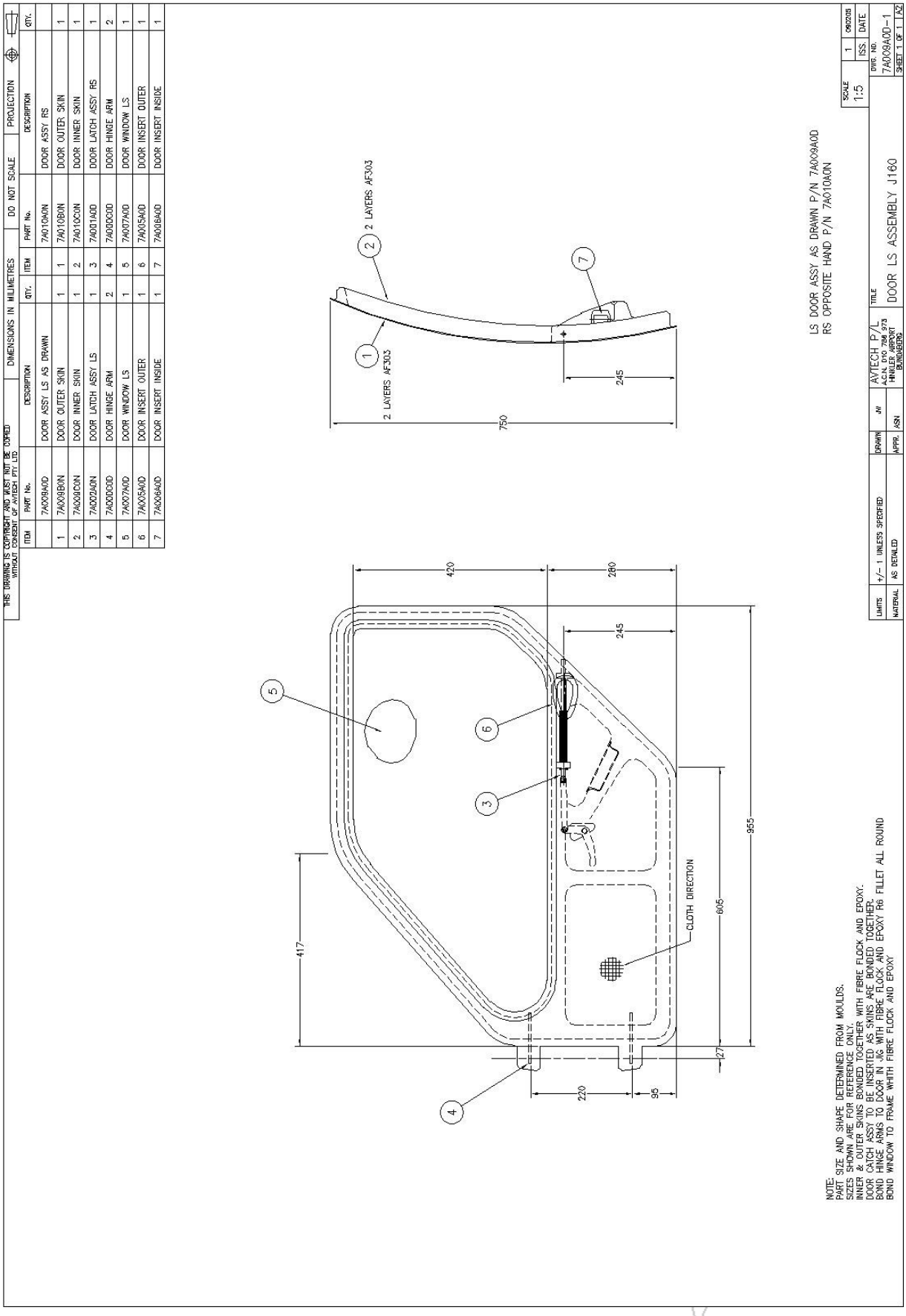

THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT CONSENT OF AVTECH PTY LTD
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
PROJECTION
ITEM | PART No. | DESCRIPTION | QTY.
7A009A0D | DOOR ASSY LS AS DRAWN
1 | 7A009B0N | DOOR OUTER SKIN | 1
2 | 7A009C0N | DOOR INNER SKIN | 1
3 | 7A0023A0N | DOOR LATCH ASSY LS | 1
4 | 7A0000C0D | DOOR HINGE ARM | 2
5 | 7A0077A0D | DOOR WINDOW LS | 1
6 | 7A0035A0D | DOOR INSERT OUTER | 1
7 | 7A0036A0D | DOOR INSERT INSIDE | 1
ITEM | PART No. | DESCRIPTION | QTY.
7A010A0N | DOOR ASSY RS | 1
7A010B0N | DOOR OUTER SKIN | 1
7A010C0N | DOOR INNER SKIN | 1
7A0014A0D | DOOR LATCH ASSY RS | 1
7A0000C0D | DOOR HINGE ARM | 2
7A0077A0D | DOOR WINDOW LS | 1
7A0035A0D | DOOR INSERT OUTER | 1
7A0036A0D | DOOR INSERT INSIDE | 1
2 LAYERS AF303
2 LAYERS AF303
750
245
LS DOOR ASSY AS DRAWN P/N 7A009A0D
RS OPPOSITE HAND P/N 7A010A0N
AVTECH P/L
DRAWN JW
APPR. ASN
TITLE
DOOR LS ASSEMBLY J160
SCALE 1:5
ISS. 1
DATE 060205
DWG. NO. 7A009A00-1
SHEET 1 OF 1 A2
LIMITS +/- 1 UNLESS SPECIFIED
MATERIAL AS DETAILED
420
280
245
955
605
417
27
220
95
CLOTH DIRECTION
NOTE:
PART SIZE AND SHAPE DETERMINED FROM MOULDS.
PARTS SHOWN ARE FOR REFERENCE ONLY.
INNER & OUTER SKINS BONDED TOGETHER WITH FIBRE FLOCK AND EPOXY.
DOOR CATCH ASSY TO BE INSERTED AS SKINS ARE BONDED TOGETHER.
BOND HINGE ARMS TO DOOR IN JIG WITH FIBRE FLOCK AND EPOXY R6 FILLET ALL ROUND
BOND WINDOW TO FRAME WHITH FIBRE FLOCK AND EPOXY

Figure 4. Door Assembly

4.3.2 ADJUSTMENT

Cabin doors should be adjusted so that the door skin fairs with the fuselage skin.

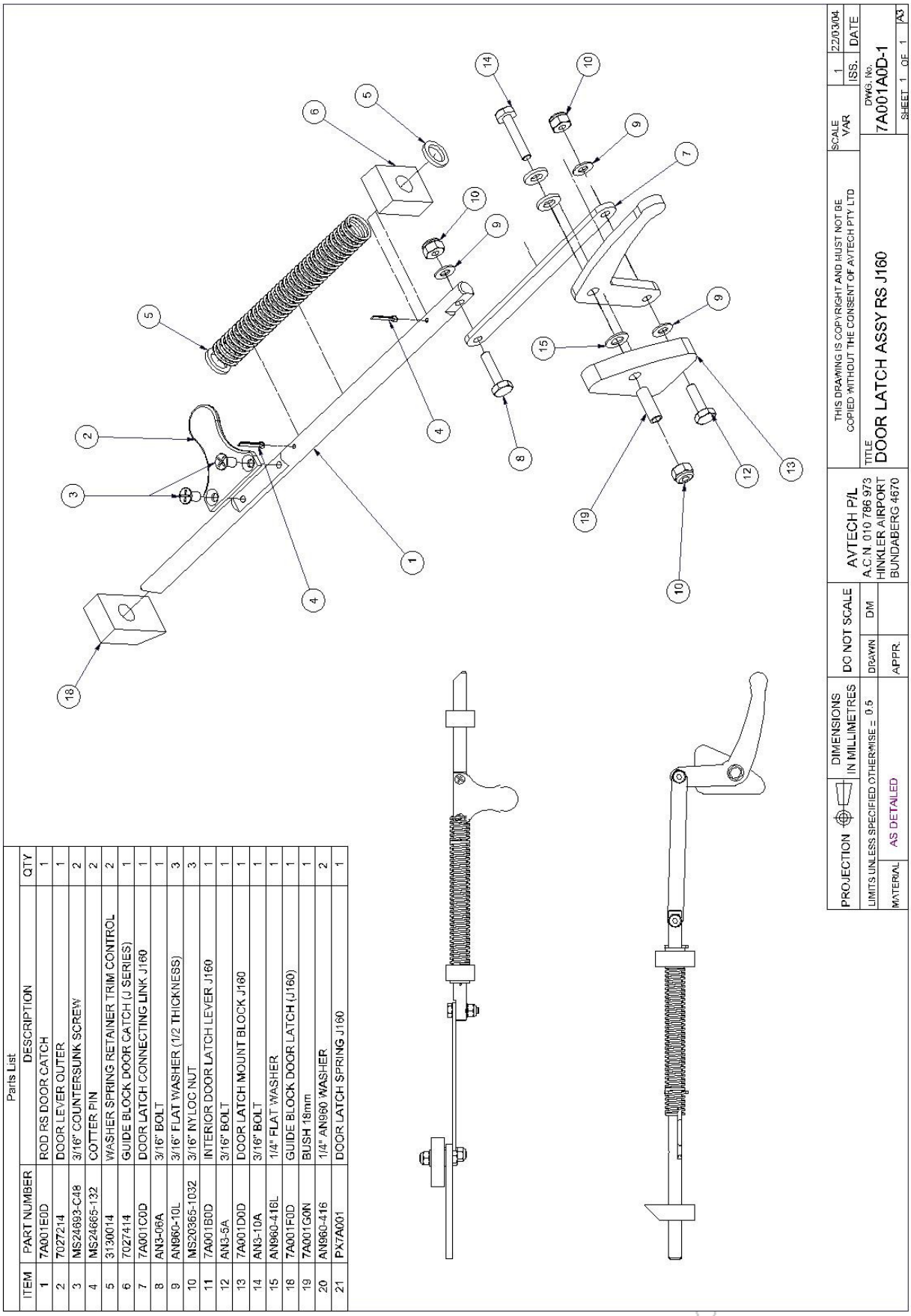
4.3.3 DOOR SEALS

A weather strip is glued around all edges of the door. Apart from excluding wind and water, the weather strip is important in minimising exhaust fume entry to the cabin. It should be maintained in good condition and fit at all times. New weather strip may be applied after mating surfaces of weather strip and door are clean, dry and free from oil and grease.

3.1.1 Cabin Door Latches

There is one main latch on each door of a simple spring type. This is complemented by two Aluminium catches at the top front quadrant of each door. An assembly drawing of the latch mechanism is provided as Figure 5 below.

Door latches or their component parts must be replaced if worn or damaged.


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 7A001E0D | ROD RS DOOR CATCH | 1
2 | 7027214 | DOOR LEVER OUTER | 1
3 | MS24693-C48 | 3/16" COUNTERSUNK SCREW | 2
4 | MS24665-132 | COTTER PIN | 2
5 | 3130014 | WASHER SPRING RETAINER TRIM CONTROL | 2
6 | 7027414 | GUIDE BLOCK DOOR CATCH (J SERIES) | 1
7 | 7A001C0D | DOOR LATCH CONNECTING LINK J160 | 1
8 | AN3-06A | 3/16" BOLT | 1
9 | AN960-10L | 3/16" FLAT WASHER (1/2 THICKNESS) | 3
10 | MS20365-1032 | 3/16" NYLOC NUT | 3
11 | 7A001B0D | INTERIOR DOOR LATCH LEVER J160 | 1
12 | AN3-5A | 3/16" BOLT | 1
13 | 7A001D0D | DOOR LATCH MOUNT BLOCK J160 | 1
14 | AN3-10A | 3/16" BOLT | 1
15 | AN960-416L | 1/4" FLAT WASHER | 1
18 | 7A001F0D | GUIDE BLOCK DOOR LATCH (J160) | 1
19 | 7A001G0N | BUSH 18mm | 1
20 | AN960-416 | 1/4" AN960 WASHER | 2
21 | PX7A001 | DOOR LATCH SPRING J160 | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE = 0.5
MATERIAL AS DETAILED
DRAWN DM
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
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TITLE
DOOR LATCH ASSY RS J160
SCALE VAR
DWG. No. 7A001A0D-1
ISS. 1 22/03/04
DATE
SHEET 1 OF 1 A3

Figure 5. Door Latch Mechanism Assembly

4.3.4 LOCKS

An optional cylinder and key lock is available. When fitted, the keyed barrel lock is located in the fuselage at the rear of the Port & Starboard & Rear doors. Spare keys are available to JABIRU registered owners by quoting the aircraft Serial Number.

4.4 SEATS

The JABIRU seats are an integral part of the structure of the aircraft; they are therefore fixed in position. Forward and upward adjustment can be achieved by placing a cushion behind and/or under the occupant. The seat pans incorporate crushable foam which is essential in providing shock absorption in crash conditions.

WARNING
DO NOT MODIFY SEATS.

4.4.1 REPAIR

As seats are integral to the aircraft structure, any repair must be referred to JABIRU AIRCRAFT Pty Ltd.

4.5 UPHOLSTERY

Seat upholstery is provided through slip-on covers. These are easily removed for cleaning and inspection of the seat structures.

Optional Hood and Cabin lining is available, together with Door Pockets.

4.5.1 UPHOLSTERY CLEANING

The upholstery used in the J160-C has been treated with a flame retardant to meet the flammability requirements of CS-VLA (formerly JAR-VLA). This treatment will withstand 5 washes or dry cleans before requiring re-application. The washing of cabin upholstery must be noted in the aircraft's maintenance log book and the flame retardant re-applied by an authorized person after 5 washes.

4.6 SOUNDPROOFING

Soundproofing material is normally used on the Firewall.

In addition, a curtain of soundproofing material can be used at the rear of the cockpit/baggage area. This curtain is attached to the forward rib of the fuselage using velcro straps. Its purpose is to minimise drumming of the fuselage as well as restricting material falling aft of the curtain and resulting in a severe aft centre of gravity condition. The curtain should be in place for all flights.

4.7 SAFETY PROVISIONS

4.7.1 SEATBELTS

Aircraft grade Seatbelts, bolted to the fuselage structure, are provided for both seats. Belts should be replaced if frayed or cut, latches are defective of stitching is broken.

Attaching parts should be replaced with equivalent grade parts if excessively worn or defective.

5 SECTION 5 – Wings And Empennage

5.1 WINGS

Refer to Figures 6, 7, 8 and 9.

NOTE:

J170, J170-SP and J170-SPC models use the same wing assembly as shown for the J170-UL below in Figures 8 and 9, with the exception of the Bare Wing Assembly – which is P/No. 2095023 in place of 2A039A0D.

Each composite wing is a semi-cantilever, monocoque type with a main spar. The wing is a moulded structure with a series of ribs that are bonded through the moulding process to the fibreglass skin, fuel tanks and to the spar.

The forward wing attachment is an extension of the forward sub-spar. The rear attachment is a composite block heavily bonded to the reinforced wing skin and attaches to the main spar through the Wing End Plug. Both attachments are through stainless steel threaded bushes bonded into the attachment blocks.

5.1.1 REMOVAL

The JABIRU aircraft is designed with wings which are removable for storage or transport.

Wing removal is most easily achieved if two persons are available to handle the wing.

1. Remove wing root fairings.
2. Drain Fuel out of Quick Drain (Note: This will take some time)
3. Remove wing strut fairings – top and bottom.
4. Disconnect Pitot tube – RH wing only.
5. Unbolt flap control rods – 1 each wing.
6. Remove flap from wing so it does not crush the fuselage when lowering down.
7. Unbolt aileron control cables (2) from rear of control stick horn inside cabin.
8. Remove pin and clamp block from aileron control cable clamps at rear of seat – 1 each seat.
9. Loosen hose clamps from Fuel lines from Breather tubes, Fuel Gauge.
10. With one person supporting wing tip, unbolt top wing strut bolt and lower wing strut to the ground.
11. Lower wing tip to towards the ground making sure you do not crush the under side of the wing on the fuselage wing root. Ret the wing tip on a saw-horse or other suitable stand.

12. Unbolt and remove front wing attachment bolt.

13. Unbolt and remove rear wing attachment bolt.
Note: It may be necessary to rock the wing slightly while pulling attaching bolt, or carefully use a long drift punch to drive out attaching bolt.

14. Carefully remove wing by moving it out to clear the aileron cable from the fuselage.

15. Place wing on cushioned structure to avoid damage to wing strut attachment.

16. Unbolt lower wing strut bolt and remove wing strut.

17. Repeat Steps 5 – 16 to remove other wing.

5.1.2 REPAIR

The wing is a composite monocoque structure. All repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

5.1.3 INSTALLATION

1. Fit the lower strut attaching bolt, leaving the top end of the strut on the ground.

WARNING

Do Not Tighten nut or metal fatigue may result. Washer must be free to rotate.

2. Fit wing to fuselage, leaving wing tip on the saw-horse and routing aileron cable through hole in fuselage wing root.

3. Install front and rear wing attaching bolts/nuts.

4. Put top wing strut attaching bolt in your pocket.

5. Lift wing tip and install wing strut to wing strut attachment with bolt from pocket. Install nut.

WARNING

Do Not Tighten nut or metal fatigue may result. Washer must be free to rotate.

6. Connect all fuel lines to wing, fuel gauge making sure there are no lines that have kinked.

7. Put about 10lts of fuel in each tank & check for any leaks.

8. Attach flap to wing ensuring all bushes are in place.

9. Install bolt/nut in flap control rod.

10. Install bolt/nut in aileron control cable on main control stick horn.

11. Install clamp block and pin in aileron control cable clamp at rear of seat.

12. On RH wing, reconnect Pitot tube.

13. Replace wing strut fairings – top and bottom.

14. Replace wing root fairings.

15. Perform a fuel flow test. Disconnect the fuel line from the mechanical fuel pump in the engine compartment. Have a second person catch any fuel that flows out of the line in a container with accurate volume marks. Turn electric fuel pump on and pump fuel through the lines into container. Ensure there is about 1 litre per minute flow rate.

NOTE: After carrying out the fuel flow test, check that both wing tanks are feeding fuel by turning off both wing tanks, pumping about a litre out of the header tank, then turning the left wing tap on. The wing tank will gravity feed to the header tank, and it should re-fill within approximately 1-2 minutes. This must be repeated for the right wing. If a wing is not flowing correctly, check lines for kinks, blockages & airlocks.

Ensure both wing taps are wired in the "ON" position using fuse wire before returning the aircraft to service.

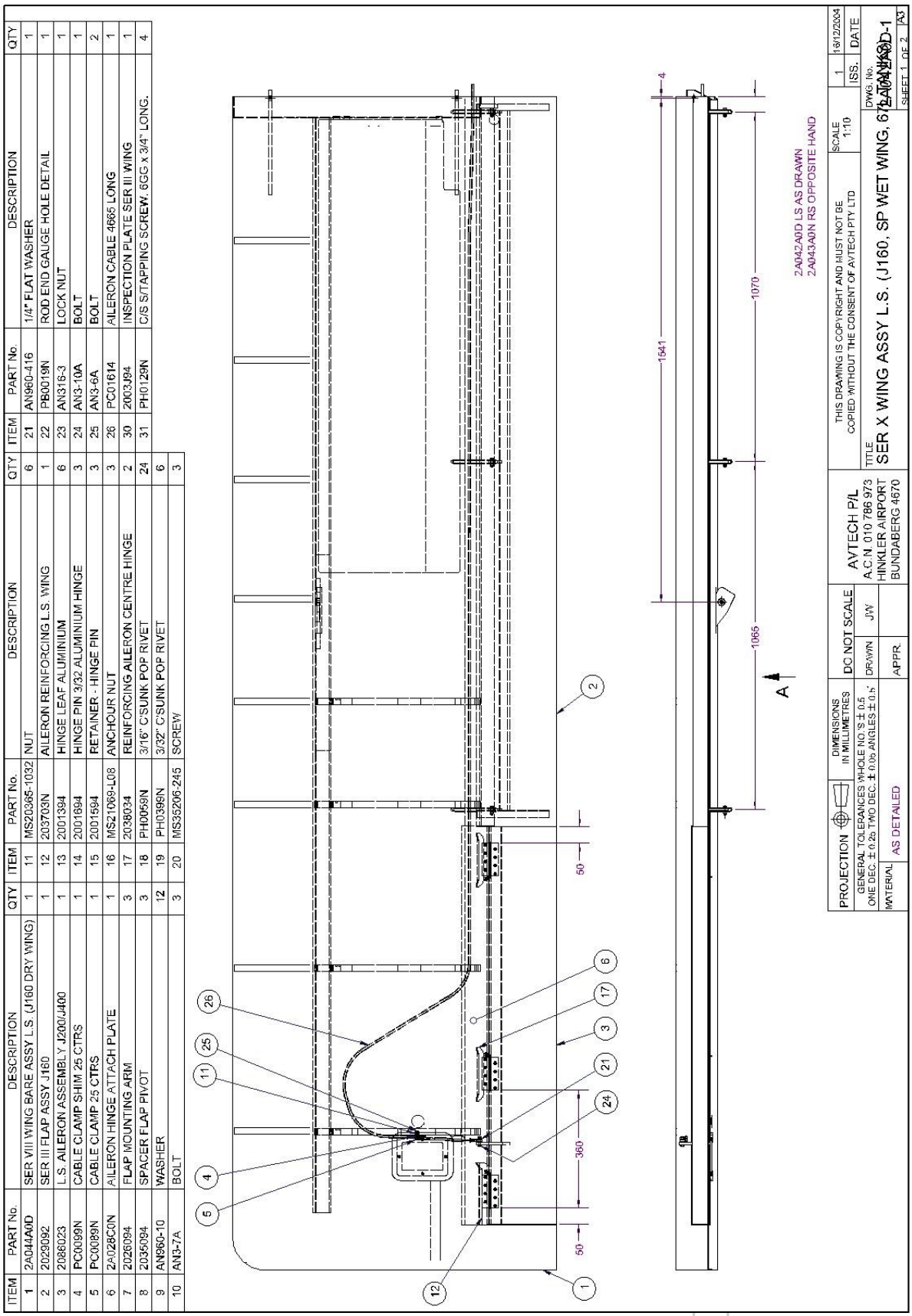
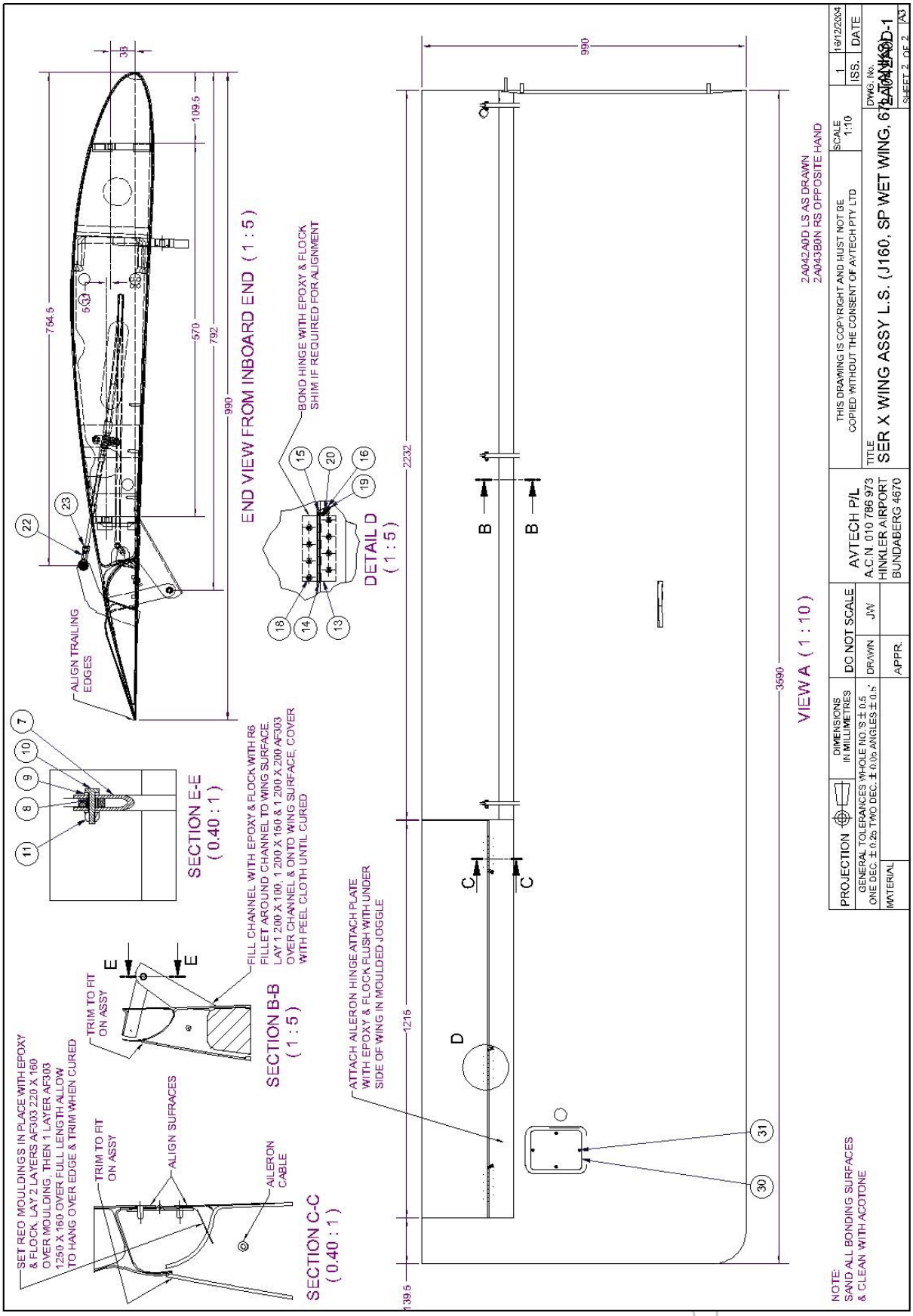

SER X WING ASSY L.S. (J160, SP WET WING, 6
2A044A0D-1
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
2A042A0D LS AS DRAWN
2A043A0N RS OPPOSITE HAND
SCALE 1:10
DO NOT SCALE
DRAWN JW
APPR.
AS DETAILED
1541
1070
1065
360
50
50
A
ITEM | PART No. | DESCRIPTION | QTY
1 | 2A044A0D | SER VIII WING BARE ASSY L.S. (J160 DRY WING) | 1
2 | 2029092 | SER III FLAP ASSY J160 | 1
3 | 2086023 | L.S. AILERON ASSEMBLY J200/J400 | 1
4 | PC0099N | CABLE CLAMP SHIM 25 CTRS | 1
5 | PC0089N | CABLE CLAMP 25 CTRS | 1
6 | 2A028C0N | AILERON HINGE ATTACH PLATE | 1
7 | 2026094 | FLAP MOUNTING ARM | 3
8 | 2035094 | SPACER FLAP PIVOT | 3
9 | AN960-10 | WASHER | 12
10 | AN3-7A | BOLT | 3
ITEM | PART No. | DESCRIPTION | QTY
11 | MS20365-1032 | NUT | 6
12 | 203703N | AILERON REINFORCING L.S. WING | 1
13 | 2001394 | HINGE LEAF ALUMINIUM | 6
14 | 2001694 | HINGE PIN 3/32 ALUMINIUM HINGE | 3
15 | 2001594 | RETAINER - HINGE PIN | 3
16 | MS21069-L08 | ANCHOUR NUT | 3
17 | 2038034 | REINFORCING AILERON CENTRE HINGE | 2
18 | PH0059N | 3/16" C'SUNK POP RIVET | 24
19 | PH0399N | 3/32" C'SUNK POP RIVET | 6
20 | MS35206-245 | SCREW | 3
ITEM | PART No. | DESCRIPTION | QTY
21 | AN960-416 | 1/4" FLAT WASHER | 1
22 | PB0019N | ROD END GAUGE HOLE DETAIL | 1
23 | AN316-3 | LOCK NUT | 1
24 | AN3-10A | BOLT | 1
25 | AN3-6A | BOLT | 2
26 | PC01614 | AILERON CABLE 4665 LONG | 1
30 | 2003J94 | INSPECTION PLATE SER III WING | 1
31 | PH0129N | C/S S/TAPPING SCREW, 6GG x 3/4" LONG. | 4

Figure 6. J160 Wing Assembly Sheet 1


END VIEW FROM INBOARD END (1 : 5)
DETAIL D (1 : 5)
BOND HINGE WITH EPOXY & FLOCK SHIM IF REQUIRED FOR ALIGNMENT
ALIGN TRAILING EDGES
SECTION E-E (0.40 : 1)
SECTION B-B (1 : 5)
SECTION C-C (0.40 : 1)
VIEW A (1 : 10)
SET REQ MOULDINGS IN PLACE WITH EPOXY & FLOCK, LAY 2 LAYERS AF303 220 X 160 OVER MOULDING, THEN 1 LAYER AF303 1250 X 160 OVER FULL LENGTH ALLOW TO HANG OVER EDGE & TRIM WHEN CURED
TRIM TO FIT ON ASSY
ALIGN SURFACES
AILERON CABLE
FILL CHANNEL WITH EPOXY & FLOCK WITH R6 FILLET AROUND CHANNEL TO WING SURFACE LAY 1 200 X 100, 1 200 X 150 & 1 200 X 200 AF303 OVER CHANNEL & ONTO WING SURFACE. COVER WITH PEEL CLOTH UNTIL CURED
ATTACH AILERON HINGE ATTACH PLATE WITH EPOXY & FLOCK FLUSH WITH UNDER SIDE OF WING IN MOULDED JOGGLE
NOTE: SAND ALL BONDING SURFACES & CLEAN WITH ACOTONE
2A04240D LS AS DRAWN
2A04380N RS OPPOSITE HAND
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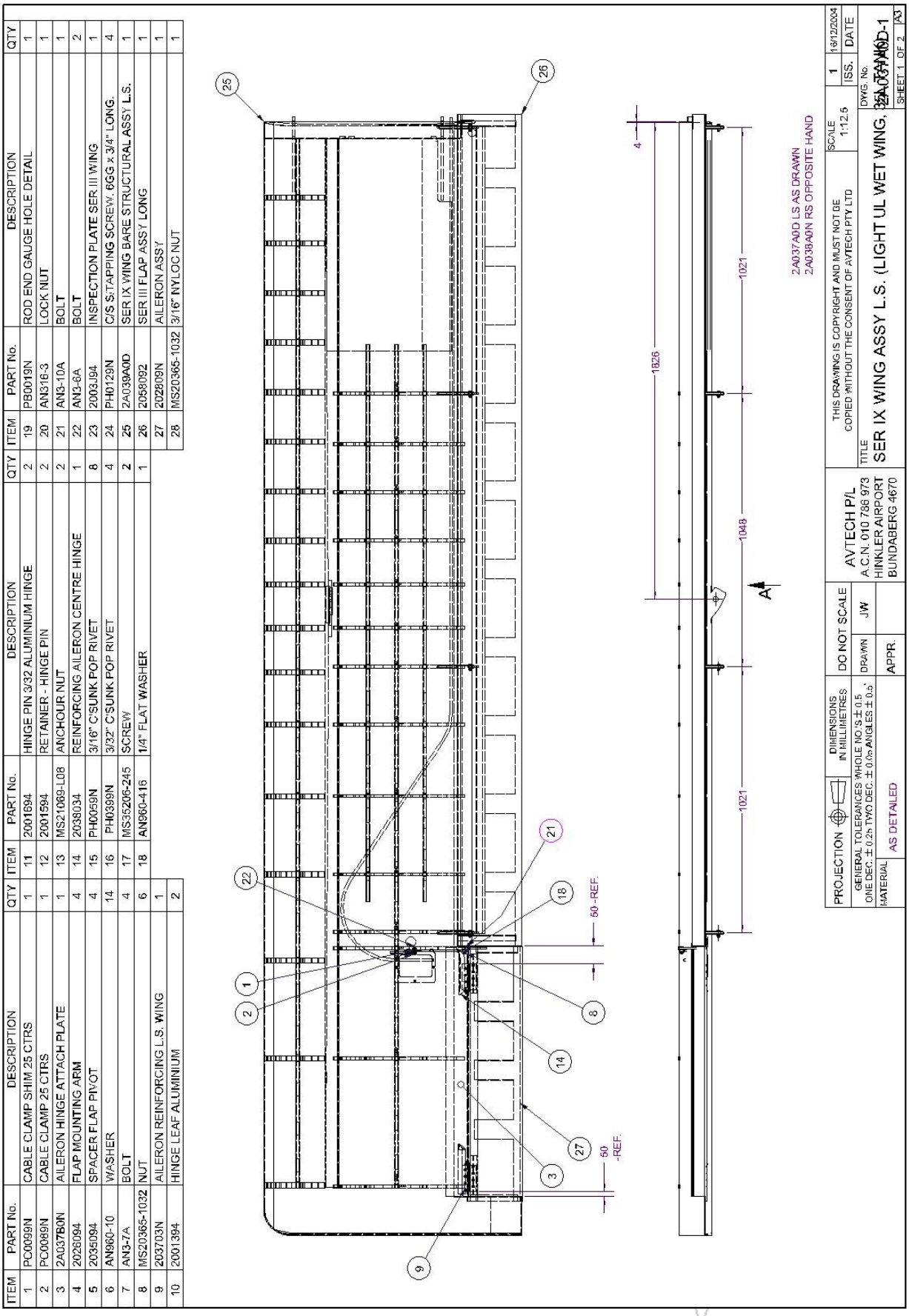
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
DO NOT SCALE
DRAWN JW
APPR.
PROJECTION
DIMENSIONS IN MILLIMETRES
GENERAL TOLERANCES WHOLE NO. ± 0.5 ONE DEC. ± 0.2s TWO DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL
SCALE 1:10
DWG. No.
ISS. 1 16/12/2004
DATE
SHEET 2 OF 2 A3
TITLE SER X WING ASSY L.S. (J160, SP WET WING, 6'
2A04240D-1

Figure 7. J160 Wing Assembly Sheet 2

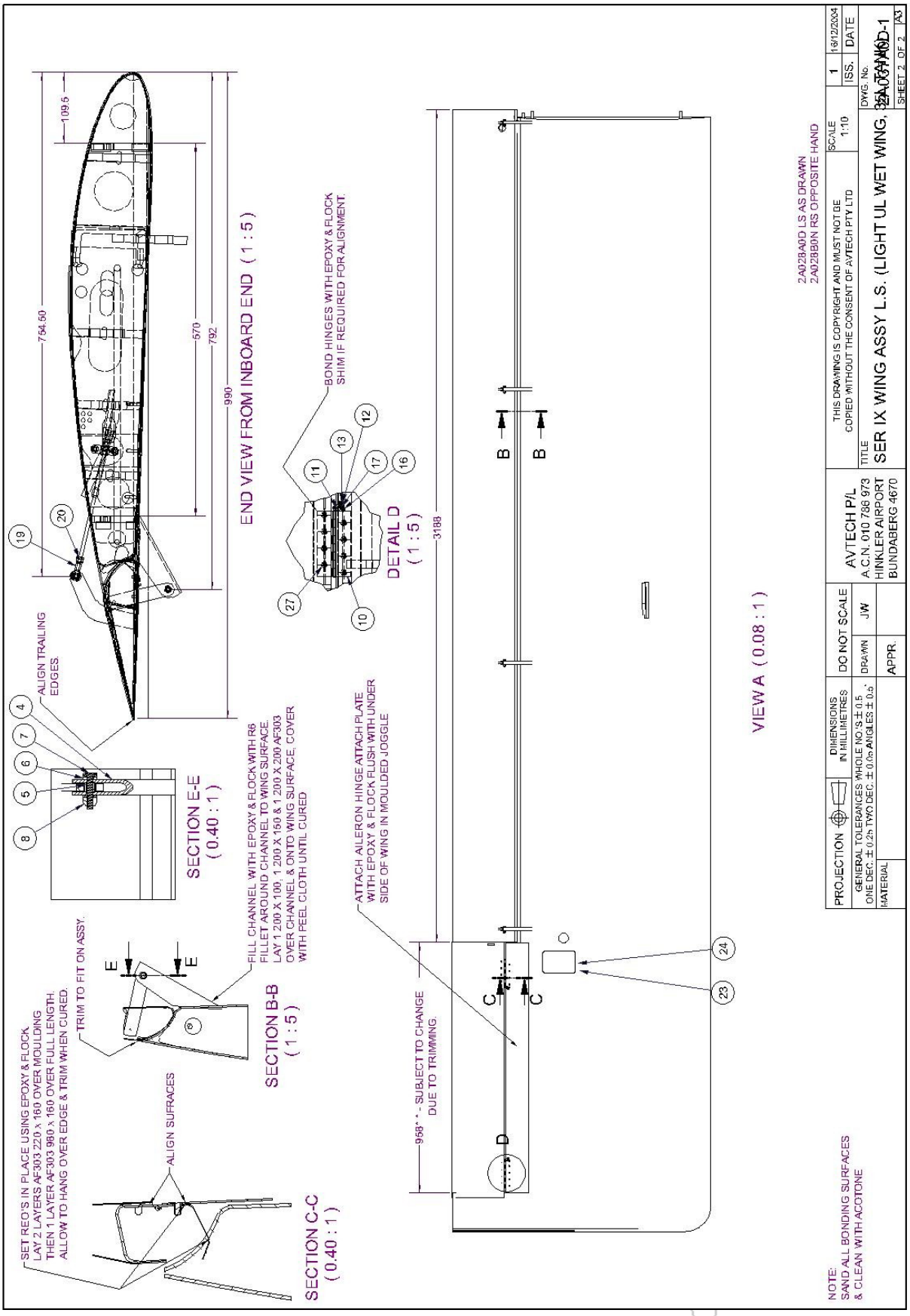


ITEM	PART No.	DESCRIPTION	QTY
1	PC0099N	CABLE CLAMP SHIM 25 CTRS	1
2	PC0089N	CABLE CLAMP 25 CTRS	1
3	2A037B0N	AILERON HINGE ATTACH PLATE	1
4	2026094	FLAP MOUNTING ARM	4
5	2035094	SPACER FLAP PIVOT	4
6	AN960-10	WASHER	14
7	AN3-7A	BOLT	4
8	MS20365-1032	NUT	6
9	203703N	AILERON REINFORCING L.S. WING	1
10	2001394	HINGE LEAF ALUMINIUM	2

ITEM	PART No.	DESCRIPTION	QTY
11	2001694	HINGE PIN 3/32 ALUMINIUM HINGE	1
12	2001594	RETAINER - HINGE PIN	1
13	MS21069-L08	ANCHOUR NUT	1
14	2038034	REINFORCING AILERON CENTRE HINGE	4
15	PH0059N	3/16" C'SUNK POP RIVET	4
16	PH0399N	3/32" C'SUNK POP RIVET	14
17	MS35206-245	SCREW	4
18	AN960-416	1/4" FLAT WASHER	6

ITEM	PART No.	DESCRIPTION	QTY
19	PB0019N	ROD END GAUGE HOLE DETAIL	2
20	AN316-3	LOCK NUT	2
21	AN3-10A	BOLT	2
22	AN3-6A	BOLT	1
23	2003.194	INSPECTION PLATE SER.III WING	8
24	PH0129N	C/S S.TAPPING SCREW. 6GG x 3/4" LONG.	4
25	2A039A0D	SER IX WING BARE STRUCTURAL ASSY L.S.	2
26	2058092	SER III FLAP ASSY LONG	1
27	202809N	AILERON ASSY	1
28	MS20365-1032	3/16" NYLOC NUT	1

Figure 8. J170-UL Wing Assy Sheet 1


END VIEW FROM INBOARD END (1 : 5)
SECTION E-E (0.40 : 1)
SECTION B-B (1 : 5)
SECTION C-C (0.40 : 1)
DETAIL D (1 : 5)
VIEW A (0.08 : 1)
ALIGN TRAILING EDGES.
BOND HINGES WITH EPOXY & FLOCK SHIM IF REQUIRED FOR ALIGNMENT.
ATTACH AILERON HINGE ATTACH PLATE WITH EPOXY & FLOCK FLUSH WITH UNDER SIDE OF WING IN MOULDED JOGGLE
FILL CHANNEL WITH EPOXY & FLOCK WITH R6 FILLET AROUND CHANNEL TO WING SURFACE LAY 1 200 X 100, 1 200 X 150 & 1 200 X 200 AF303 OVER CHANNEL & ONTO WING SURFACE. COVER WITH PEEL CLOTH UNTIL CURED
SET REQ'S IN PLACE USING EPOXY & FLOCK. LAY 2 LAYERS AF303 220 x 160 OVER MOULDING THEN 1 LAYER AF303 980 x 160 OVER FULL LENGTH. ALLOW TO HANG OVER EDGE & TRIM WHEN CURED.
TRIM TO FIT ON ASSY.
ALIGN SURFACES
958* - SUBJECT TO CHANGE DUE TO TRIMMING.
NOTE: SAND ALL BONDING SURFACES & CLEAN WITH ACOTONE
2A028A00 LS AS DRAWN
2A028B0N RS OPPOSITE HAND
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TITLE
SER IX WING ASSY L.S. (LIGHT UL WET WING, 2A028A00-1
SCALE 1:10
DWG. No.
ISS. 1
DATE 16/12/2004
SHEET 2 OF 2 A3
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
GENERAL TOLERANCES WHOLE NO'S ± 0.5 ONE DEC. ± 0.2 TWO DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL
DRAWN JW
APPR.

Figure 9. J170-UL Wing Assy Sheet 2

5.2 WING STRUTS

Each wing strut is a single lift strut which transmits a part of the wing load to the lower portion of the fuselage. The strut consists of a streamlined tube riveted to two end fittings which attach to the fuselage and wing.

WARNING

Do Not Tighten Strut Attachment Bolts. Metal fatigue may result. Bolt must be free to rotate.

5.2.1 REMOVAL AND INSTALLATION

See Wing Removal (Paragraph 5.2.1) and Wing Installation (Paragraph 5.2.3).

5.2.2 REPAIR

Wing struts are structural components and therefore all repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

A dented, cracked or deformed wing strut should be replaced prior to next flight.

5.3 FIN

The Fin is a moulded composite structure supported by a rib and a rear spar. Hinges attach the rear spar to the rudder.

5.3.1 REMOVAL, INSTALLATION, INSPECTION AND REPAIR

The fin is an integral part of the fuselage structure and cannot be removed.
All repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

5.4 HORIZONTAL STABILISER

The horizontal stabiliser is a moulded monocoque structure of rigid cellular polystyrene bonded to a fibreglass skin and rear spar. Refer to Figure 30.

5.4.1 REMOVAL AND INSTALLATION

The horizontal stabiliser is an integral part of the fuselage to which it is bonded. It cannot be removed.

All repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local representative.

6 SECTION 6 – LANDING GEAR and BRAKES

6.1 LANDING GEAR

Main gear comprises two separate composite beams which are bolted to the fuselage at the top and centre and to the wheel stub at the bottom.

The nose gear is a welded steel, trailing arm assembly with a rubber spring system. The nose wheel is steerable with the rudder pedals.

Nose Wheel and Main Wheel Speed Fairings are optional equipment.

6.2 TROUBLE SHOOTING – MAIN UNDERCARRIAGE

Table 5. Trouble Shooting – Main Undercarriage

Trouble	Probable Cause	Remedy
Aircraft leans to one side	Incorrect tyre inflation	Inflate to pressure shown at above
	Landing gear attaching parts not tight	Tighten loose parts. Replace defective parts.
	Bent axle stubs	Install new part(s)
Tyres wear excessively	Incorrect tyre inflation	Inflate to pressure shown in above
	Main wheels out of alignment	Align as specified above
	Bent axle stubs	Install new part (s)
	Dragging Brakes	Refer to Para. 6.8

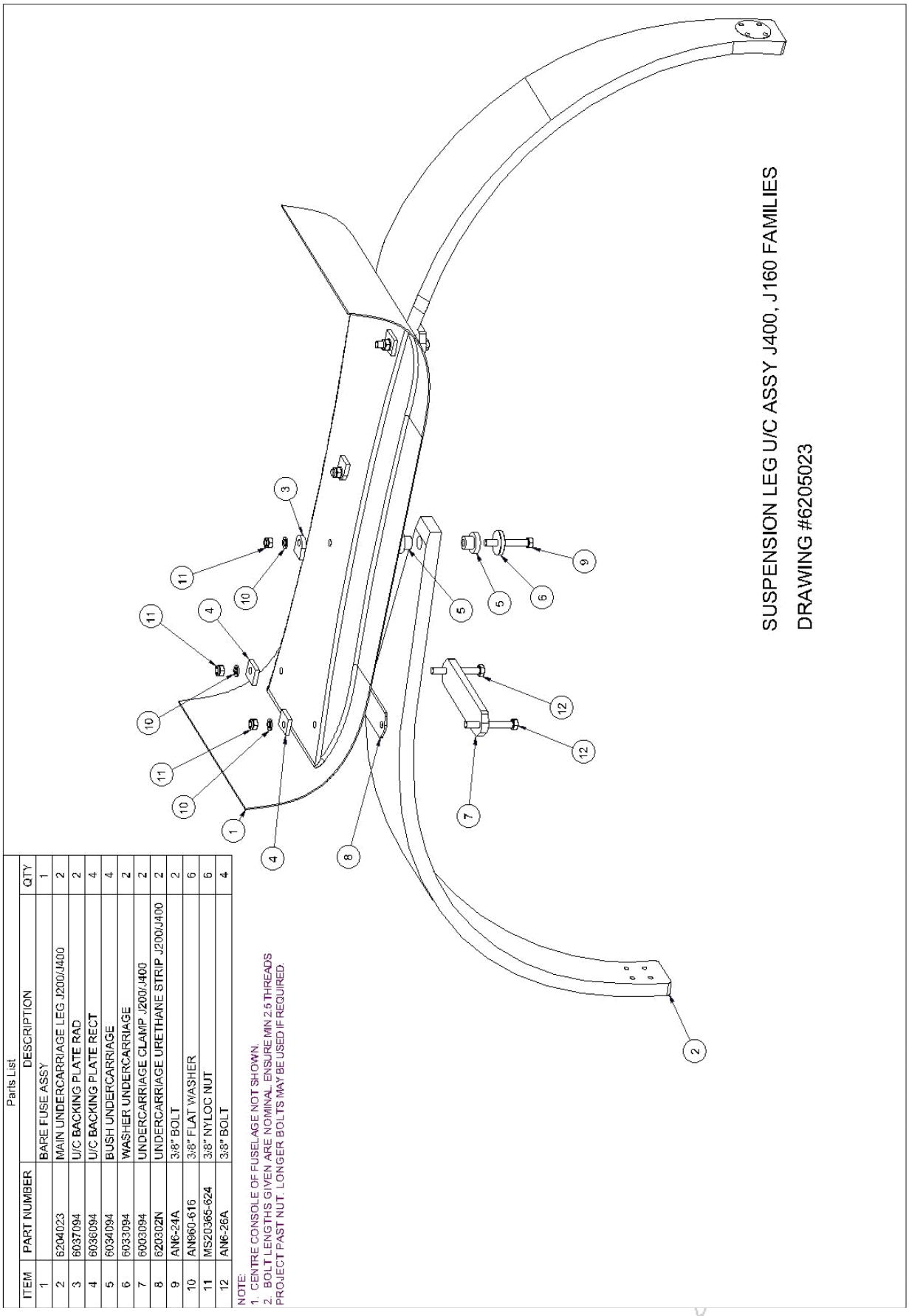
6.3 MAIN GEAR

Figures 10, 11 an 12 illustrate the main landing gear. The illustrations should be used in conjunction with the following procedures during removal and installation of component parts.

WARNING: Check looseness of main U/C beams by lifting each wing and trying to move beam back and forth. If movement, tighten clamp bolts (2) evenly to take beam movement out. Do not over tighten or exceed 3 threads clear on the nuts (use extra washers). Over tightening can cause bolt fracture and failure to tighten both can also cause bolt failure. (See Torque Value Figure 1-2).

The wheels comprise two wheel halves which are assembled as shown in Figure 11. During assembly of the main wheels the through-bolts/nuts should be tightened to the value specified in Table 3.

The assembly of the wheels to the undercarriage leg is shown in Figure 12.



Parts List

ITEM	PART NUMBER	DESCRIPTION	QTY
1		BARE FUSE ASSY	1
2	6204023	MAIN UNDERCARRIAGE LEG J200/J400	2
3	6037094	U/C BACKING PLATE RAD	2
4	6036094	U/C BACKING PLATE RECT	4
5	6034094	BUSH UNDERCARRIAGE	4
6	6033094	WASHER UNDERCARRIAGE	2
7	6003094	UNDERCARRIAGE CLAMP J200/J400	2
8	6203023N	UNDERCARRIAGE URETHANE STRIP J200/J400	2
9	AN6-24A	3/8" BOLT	2
10	AN960-616	3/8" FLAT WASHER	6
11	MS20365-624	3/8" NYLOC NUT	6
12	AN6-26A	3/8" BOLT	4

NOTE:
1. CENTRE CONSOLE OF FUSELAGE NOT SHOWN.
2. BOLT LENGTHS GIVEN ARE NOMINAL, ENSURE MIN 2.5 THREADS PROJECT PAST NUT. LONGER BOLTS MAY BE USED IF REQUIRED.

Figure 10. Main Undercarriage Assembly

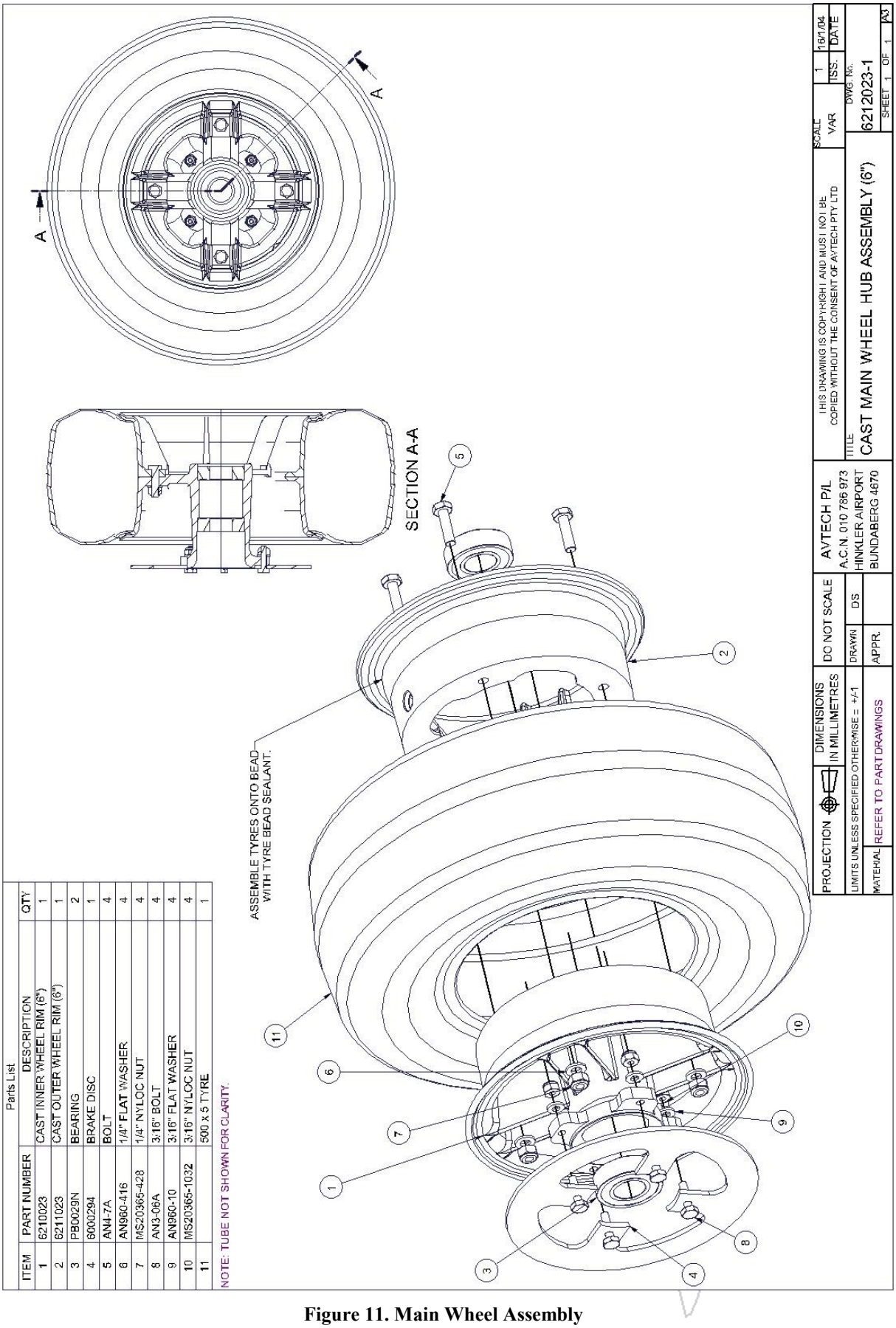
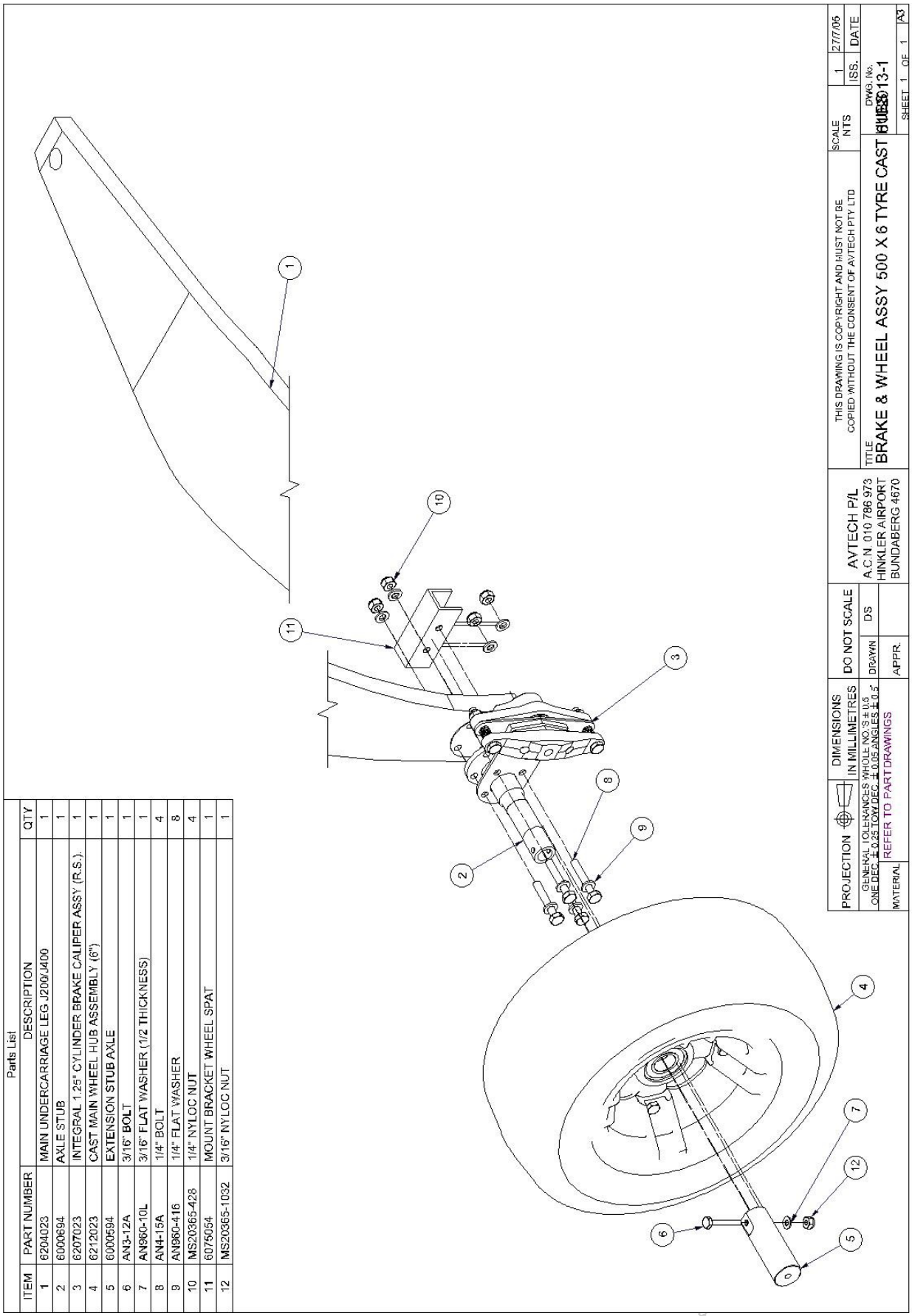

A
A
SECTION A-A
ASSEMBLE TYRES ONTO BEAD WITH TYRE BEAD SEALANT.
1
2
3
4
5
6
7
8
9
10
11
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6210023 | CAST INNER WHEEL RIM (6") | 1
2 | 6211023 | CAST OUTER WHEEL RIM (6") | 1
3 | PB0029N | BEARING | 2
4 | 6000294 | BRAKE DISC | 1
5 | AN4-7A | BOLT | 4
6 | AN960-416 | 1/4" FLAT WASHER | 4
7 | MS20365-428 | 1/4" NYLOC NUT | 4
8 | AN3-06A | 3/16" BOLT | 4
9 | AN960-10 | 3/16" FLAT WASHER | 4
10 | MS20365-1032 | 3/16" NYLOC NUT | 4
11 | | 500 x 5 TYRE | 1
NOTE: TUBE NOT SHOWN FOR CLARITY.
PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
LIMITS UNLESS SPECIFIED OTHERWISE = +/-1
DRAWN DS
MATERIAL REFER TO PART DRAWINGS
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
TITLE: CAST MAIN WHEEL HUB ASSEMBLY (6")
SCALE VAR
ISS: 1
DATE 16/1/04
DWG No. 6212023-1
SHEET 1 OF 1
A3

Figure 11. Main Wheel Assembly


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6204023 | MAIN UNDERCARRIAGE LEG J200/J400 | 1
2 | 6000694 | AXLE STUB | 1
3 | 6207023 | INTEGRAL 1.25" CYLINDER BRAKE CALIPER ASSY (R.S.) | 1
4 | 6212023 | CAST MAIN WHEEL HUB ASSEMBLY (6") | 1
5 | 6000594 | EXTENSION STUB AXLE | 1
6 | AN3-12A | 3/16" BOLT | 1
7 | AN960-10L | 3/16" FLAT WASHER (1/2 THICKNESS) | 1
8 | AN4-15A | 1/4" BOLT | 4
9 | AN960-416 | 1/4" FLAT WASHER | 8
10 | MS20365-428 | 1/4" NYLOC NUT | 4
11 | 6075054 | MOUNT BRACKET WHEEL SPAT | 1
12 | MS20365-1032 | 3/16" NYLOC NUT | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
GENERAL TOLERANCES WHOLE NO.'S ± 1/2
ONE DEC. ± 0.25 TOW DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL
DO NOT SCALE
DRAWN DS
APPR.
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TITLE
BRAKE & WHEEL ASSY 500 X 6 TYRE CAST
SCALE NTS
ISS. 1
DATE 27/7/05
DWG. No.
SHEET 1 OF 1
A3

Figure 12. Main Wheel to Leg Assy

6.3.1 REMOVAL

The following procedural steps remove one side of the landing gear as a complete assembly. Refer to applicable paragraphs for removal of the individual components.

1. Jack the aircraft in accordance with the details given in Section 3.

2. Unbolt wheel end of flexible brake hose – catching brake fluid in a container.

3. Remove bolt/nut from top inboard end of undercarriage beam. Remove rubber bushes (2).

4. Remove bolts/nuts (2) from the clamp at bend in undercarriage beam.

5. Remove clamp.

6. Remove Undercarriage Leg Assembly.

6.3.2 INSTALLATION

The following procedural steps install the landing gear as a complete assembly. Refer to applicable paragraphs for installation of the individual components.

With aircraft jacked:

1. Offer the beam to the fuselage and install clamp and bolts/nuts (2 OFF) – Do not tighten at this stage.

2. Locate top end bolt, install and tighten nut (See Torque Value in Table 3).

3. Tighten clamp bolts/nuts (2 OFF) (See Torque Value in Table 3).

4. Connect flexible brake line.

5. Top-up brake master cylinder with fresh brake fluid and bleed brakes – see Paragraph 6.8.5.

6. Lower aircraft

6.3.3 INSPECTION AND REPAIR

1. Inspect composite beam for damage indicated by cracks or delamination. Pay particular attention to the area around the centre bend and to areas around drilled holes.

2. Inspect bolts and nuts for signs of stress or bending – replace if in any doubt.

3. Inspect clamp for damage.

4. Inspect bolt seats in fuselage for signs of damage, wear or perishing.
   Repairs to the composite undercarriage beams must be referred to JABIRU AIRCRAFT Pty Ltd or our local approved agent.

6.3.4 MAIN WHEEL FAIRING REMOVAL AND INSTALLATION

1. Remove the machine screws around the join of the inner and outer sections of the fairing.

2. Remove the bolt on the outside of the fairing.

3. Remove the machine screws (2 OFF) on the inboard side of the leg.

4. Reverse the preceding steps for installation.

6.3.5 MAIN GEAR TOP FAIRING REMOVAL AND INSTALLATION

The fairing at the top of the main undercarriage leg is removed by removing the securing screws.

To install, reverse this procedure.

6.4 MAIN WHEEL

Refer to Figure 12

6.4.1 MAIN WHEEL REMOVAL

1. Jack aircraft as outlined in Section 3 above.

2. Remove speed fairing, if installed, in accordance with paragraph 6.3.4.

3. Remove outboard brake pad plate.

4. Remove lock bolt/nut through centre of axle and spacer.

5. Remove lock spacer.

6. Pull wheel from axle.

6.4.2 MAIN WHEEL DISASSEMBLY

1. Deflate tyre and break tyre beads loose from tyre rims.

WARNING

Injury can result from attempting to separate wheel halves with the tyre inflated. Avoid damaging wheel flanges when breaking beads loose as a scratch, nick or gouge may cause wheel failure.

2. Remove through-bolts/nuts and separate wheel halves, removing tyre, tube and wheel hub.

3. Remove brake disc.

4. Remove bearings from hub.

NOTE:
The bearing are “press-fit” in the wheel hub and should not be removed unless a new part is to be installed.

6.4.3 MAIN WHEEL INSPECTION, ASSEMBLY AND REPAIR

1. Clean all metal parts in solvent and dry thoroughly.

2. Inspect wheel halves for cracks. Cracked wheel halves should be discarded and new parts used. Sand out nicks, gouges and corroded areas.

3. If excessively warped or scored or worn to a thickness of 2 mm, brake discs should be replaced with a new part. Sand smooth small nicks and scratches.

4. Carefully inspect bearings for damage and discolouration.

NOTE:
Bearings are pre-packed. **DO NOT** clean with solvents as it will remove the packing.

5. Replace bearings.

6. Apply automotive wheel rim lubricant to the bead areas of the rim halves.

7. Position tyre and tube between wheel halves with tube inflation valve through hole in outside wheel half.

8. Mate wheel halves. While holding halves together, assemble a washer and nut on one through-bolt and tighten snugly. Assemble the remaining washers and nuts on the through-bolts and torque to the value specified in Table 3.

CAUTION

Ensure tube is not pinched between wheel halves during assembly. Uneven or improper torque of through-bolt nuts can cause failure of bolts with resultant wheel failure.

9. Insert through-bolts through brake disc and position disc on the inner wheel hub flange.

10. Inflate tyre to seat tyre beads, then adjust to correct tyre pressure – Refer Aircraft Specifications above.

6.4.4 MAIN WHEEL INSTALLATION

1. Lightly coat axle with “Anti Sieze” or a Water Proof grease.

2. Place wheel assembly on axle.

3. Install spacer and lock bolt/nut through centre of axle.

4. Place outboard brake pad plate and springs in position and secure with bolts/nuts/washers.

5. Reconnect flexible brake line.

6. Refill brake master cylinder with fresh brake fluid.

7. Bleed brakes – Refer to Section 7.8.5.

8. Install speed fairing (if used) as outlined in Paragraph 7.3.4.

6.4.5 MAIN WHEEL STUB AXLE REMOVAL

1. Remove speed fairing (if installed) in accordance with Paragraph 7.3.4.

2. Remove wheel in accordance with Paragraph 5.4.1.

3. Disconnect flexible brake hose and drain brake fluid.

4. Remove 4 bolts/nuts/washers securing axle to leg.

NOTE:

When removing axle from leg, note number and position of the wheel alignment shims (if any) between the axle flange and composite leg. Mark these shims or tape them together carefully so that they can be installed in exactly the same position, to ensure that wheel alignment is not disturbed.

5. Remove inboard brake plate.

6.4.6 MAIN WHEEL STUB AXLE INSTALLATION

1. Secure axle and inboard brake plate to composite leg, making sure that any wheel alignment shims are installed in their original position.

2. Install wheel assembly on axle in accordance with Paragraph 7.4.4.

6.4.7 MAIN WHEEL ALIGNMENT

Refer to Figure 13.

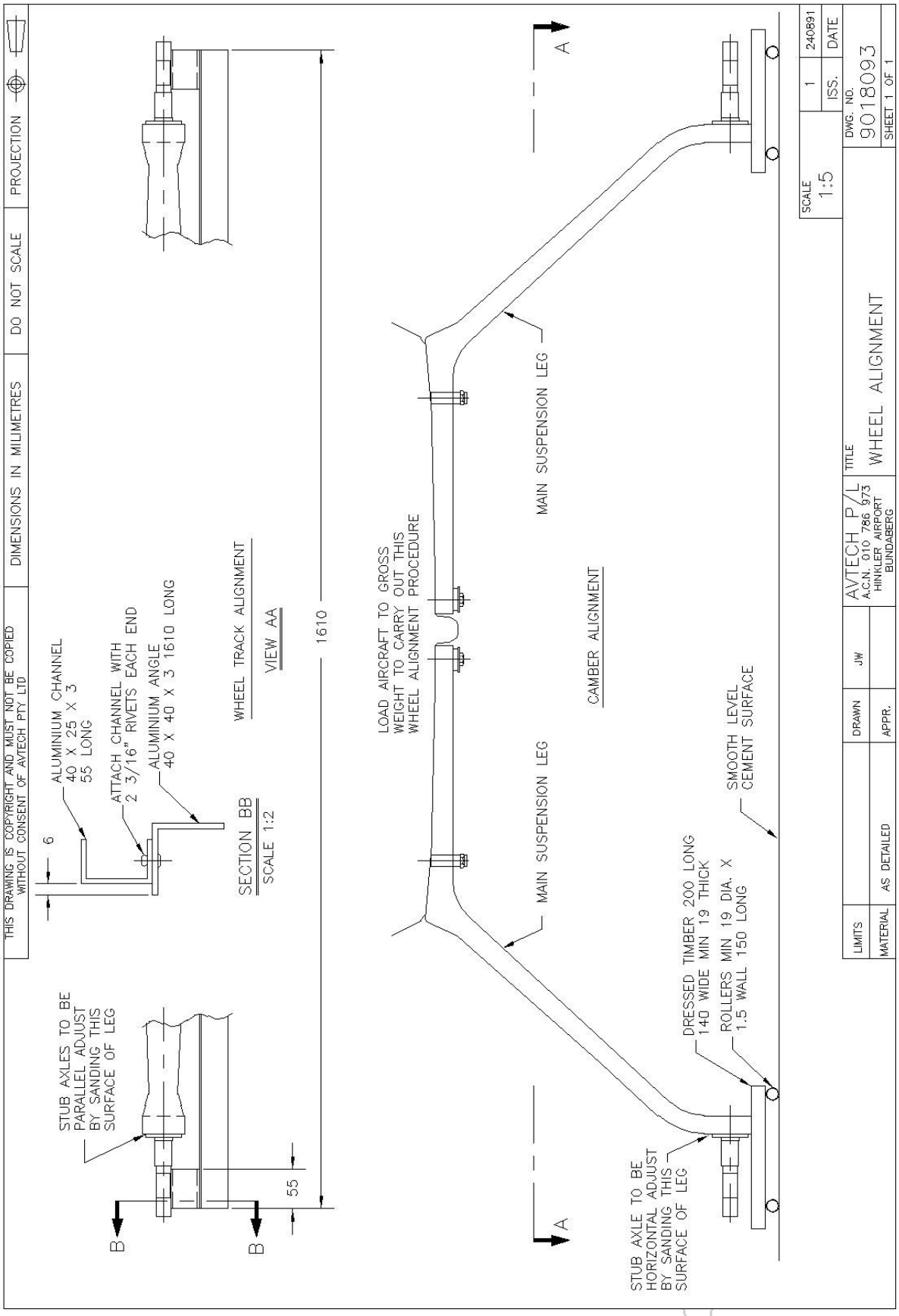


Figure 13. Main Wheel Alignment

6.4.8 WHEEL BALANCING

Since uneven tyre wear is usually the cause of tyre imbalance, replacing the tyre will probably correct this condition. If a wheel shows evidence of imbalance during service, it may be statically balanced.

6.5 NOSE GEAR

The nose gear comprises a steerable nose wheel mounted on a welded steel assembly with an aluminium wheel yoke and a rubber spring system.

The steel tube is constrained within two Ertalite bushes mounted in an aluminium housing which is attached to the front of the firewall.

Nose wheel steering is achieved by connecting the rudder pedal assembly to the nose wheel steering link by push rods. The nosewheel is centred by springs.

A nose wheel speed fairing (wheel spat) is standard equipment.

Disassembly, inspection, repair and reassembly of the nose wheel assembly are described in separate paragraphs.

The wheel is in two halves which are joined by through-bolts to the wheel hub as shown in Figure 15. During assembly of the nose wheel, the through-bolts must be tightened evenly and torqued to the value specified in Table 3.

6.5.1 TROUBLE SHOOTING – NOSE LEG

Table 6. Trouble Shooting – Nose Leg.

Trouble	Probable Cause	Remedy
Nose wheel shimmy	Nose strut bolts loose	Tighten bolts
	Loose or worn steering link	Tighten, replace defective parts
	Nose wheel out of balance	Refer Paragraph 5.6.5
	Wheel bearings loose	Replace

6.5.2 NOSE GEAR REMOVAL AND INSTALLATION

See Figures 16 and 15.

1. Weight or tie-down tail of aircraft to raise nose wheel off floor.

2. Disconnect nose wheel steering pushrods and steering cross beam.

3. Unbolt steering cross beam.

4. Remove upper collar / steering yoke (dependant on aircraft S/No.) from the top of the leg.

5. Disconnect the nosewheel centring mechanism.

6. Pull the nose wheel strut assembly down from the bushes in the fuselage.

7. To install the nose gear, reverse the preceding steps.

6.5.3 NOSE GEAR INSPECTION AND REPAIR

1. Inspect steel tube and attachments for dents and straightness.

2. Inspect rubber spring assembly for damage or perishing of the rubber, or delamination of the rubber from the aluminium spacers between the rubber blocks.

3. Inspect aluminium wheel yoke for damage or bending.

4. Inspect bolts/nuts for torque – see torque values Table 3.

5. Repairs to the welded nose leg assembly beam must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

6.5.4 NOSE WHEEL SPEED FAIRING REMOVAL AND INSTALLATION

1. Remove the machine screws around the forward and rear sections of the fairing and remove the front section.

2. Loosen the axle nuts and remove the rear section.

3. Reverse the preceding steps for installation.

6.6 NOSE WHEEL

6.6.1 NOSE WHEEL REMOVAL AND INSTALLATION

1. Weight or tie-down tail of aircraft to raise the nose wheel off the floor.

2. Remove nose wheel axle bolt.

3. Pull nose wheel assembly from yoke.

4. Reverse the preceding steps to install nose wheel. Tighten axle bolt.

6.6.2 NOSE WHEEL DISASSEMBLY

Completely deflate tyre and break tyre beads loose at wheel rim. Refer to Figure 15.

WARNING

Injury can result from attempting to separate wheel halves with the tyre inflated. Avoid damaging wheel flanges when breaking beads loose as a scratch, nick or gouge may cause wheel failure.

1. Remove through-bolts and separate wheel halves.

2. Remove wheel hub.

3. Remove tyre and tube from wheel halves.

4. Remove bearings.

NOTE:

The bearings are “press-fit” in the wheel hub and should not be removed unless a new part is to be installed.

6.6.3 NOSE WHEEL INSPECTION AND REPAIR

1. Clean metal parts in solvent and dry thoroughly.

2. Inspect wheel halves for cracks. Cracked wheel halves should be discarded and new parts used. Sand out nicks, gouges and corroded areas. Clean thoroughly

3. Carefully inspect bearings for damage and discolouration.

NOTE:

Bearings are pre-packed. **DO NOT** clean with solvents as it will remove the packing.

4. Refit bearings.

6.6.4 NOSE WHEEL REASSEMBLY

1. Replace bearings in wheel hub.

2. Apply automotive wheel rim lubricant to the tyre bead faces on the inside of the wheel rims.

3. Position tyre and tube between wheel halves with tube inflation valve through hole in outside wheel half.

4. Mate wheel halves. While maintaining a light force, assemble a washer and nut on one through-bolt and tighten snugly. Assemble the remaining washers and nuts on the through-bolts and torque to the value specified in Table 3.

WARNING

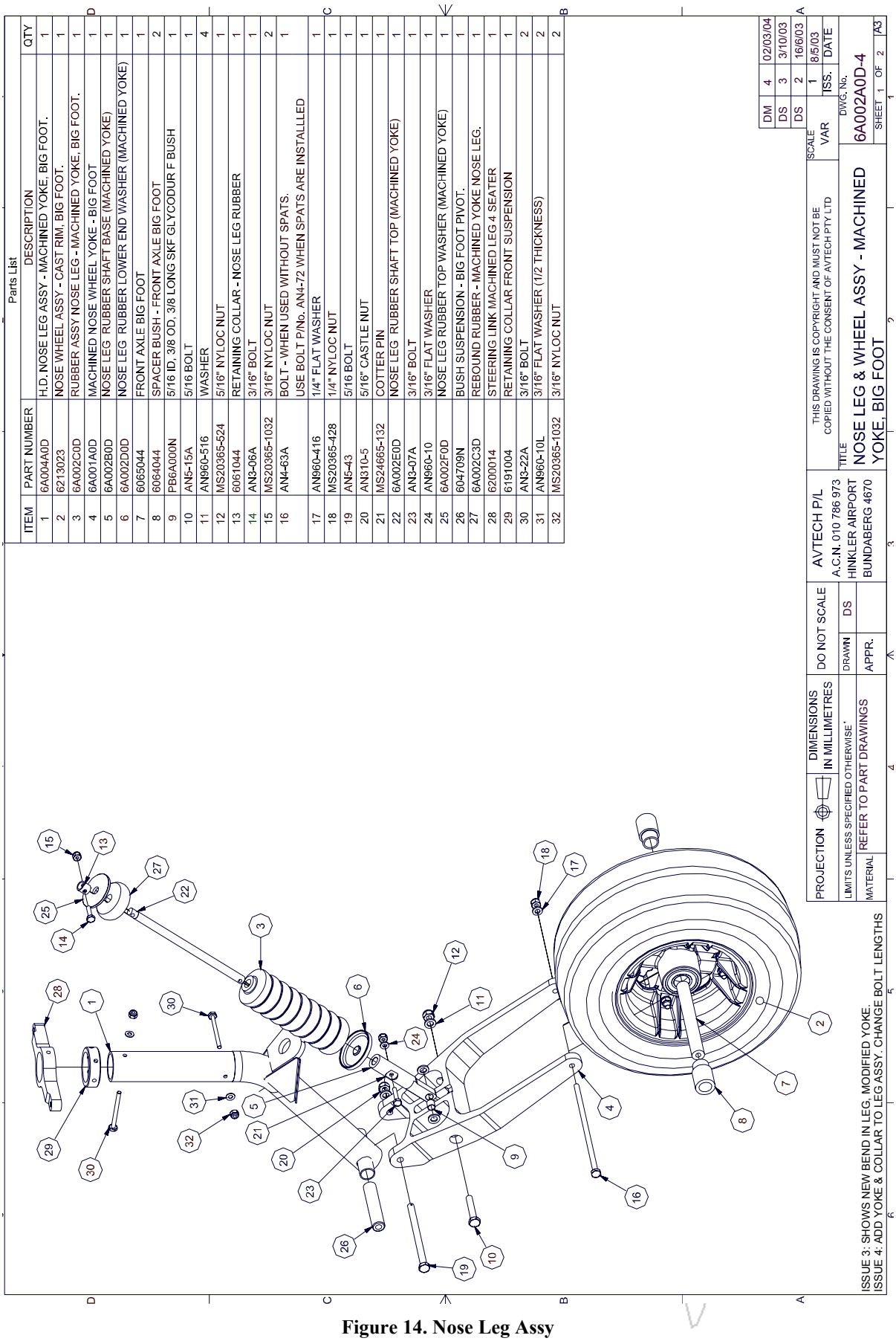
Ensure tube is not pinched between wheel halves during assembly. Uneven or improper torque of through-bolt nuts can cause failure of bolts with resultant wheel failure.

5. Insert through-bolts through brake disc and position disc on the inner wheel hub flange.

6. Inflate tyre to seat the tyre beads, adjust to correct tyre pressure – Refer Aircraft Specifications above.

6.6.5 WHEEL BALANCING

Refer to Paragraph 6.4.8 for wheel balancing information.



Parts List

ITEM	PART NUMBER	DESCRIPTION	QTY
1	6A004A0D	H.D. NOSE LEG ASSY - MACHINED YOKE, BIG FOOT.	1
2	6213023	NOSE WHEEL ASSY - CAST RIM, BIG FOOT.	1
3	6A002C0D	RUBBER ASSY NOSE LEG - MACHINED YOKE, BIG FOOT.	1
4	6A001A0D	MACHINED NOSE WHEEL YOKE - BIG FOOT	1
5	6A002B0D	NOSE LEG RUBBER SHAFT BASE (MACHINED YOKE)	1
6	6A002D0D	NOSE LEG RUBBER LOWER END WASHER (MACHINED YOKE)	1
7	6065044	FRONT AXLE BIG FOOT	1
8	6064044	SPACER BUSH - FRONT AXLE BIG FOOT	2
9	PB6A000N	5/16 ID, 3/8 OD, 3/8 LONG SKF GLYCODUR F BUSH	1
10	AN5-15A	5/16 BOLT	1
11	AN960-516	WASHER	4
12	MS20365-524	5/16" NYLOC NUT	1
13	6061044	RETAINING COLLAR - NOSE LEG RUBBER	1
14	AN3-06A	3/16" BOLT	1
15	MS20365-1032	3/16" NYLOC NUT	2
16	AN4-63A	BOLT - WHEN USED WITHOUT SPATS. USE BOLT P/No. AN4-72 WHEN SPATS ARE INSTALLED	1
17	AN960-416	1/4" FLAT WASHER	1
18	MS20365-428	1/4" NYLOC NUT	1
19	AN5-43	5/16 BOLT	1
20	AN310-5	5/16" CASTLE NUT	1
21	MS24665-132	COTTER PIN	1
22	6A002E0D	NOSE LEG RUBBER SHAFT TOP (MACHINED YOKE)	1
23	AN3-07A	3/16" BOLT	1
24	AN960-10	3/16" FLAT WASHER	1
25	6A002F0D	NOSE LEG RUBBER TOP WASHER (MACHINED YOKE)	1
26	604709N	BUSH SUSPENSION - BIG FOOT PIVOT.	1
27	6A002C3D	REBOUND RUBBER - MACHINED YOKE NOSE LEG.	1
28	6200014	STEERING LINK MACHINED LEG 4 SEATER	1
29	6191004	RETAINING COLLAR FRONT SUSPENSION	1
30	AN3-22A	3/16" BOLT	2
31	AN960-10L	3/16" FLAT WASHER (1/2 THICKNESS)	2
32	MS20365-1032	3/16" NYLOC NUT	2

PROJECTION
DIMENSIONS IN MILLIMETRES
DO NOT SCALE
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A.C.N. 010 786 973
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LIMITS UNLESS SPECIFIED OTHERWISE'
DRAWN DS
MATERIAL REFER TO PART DRAWINGS
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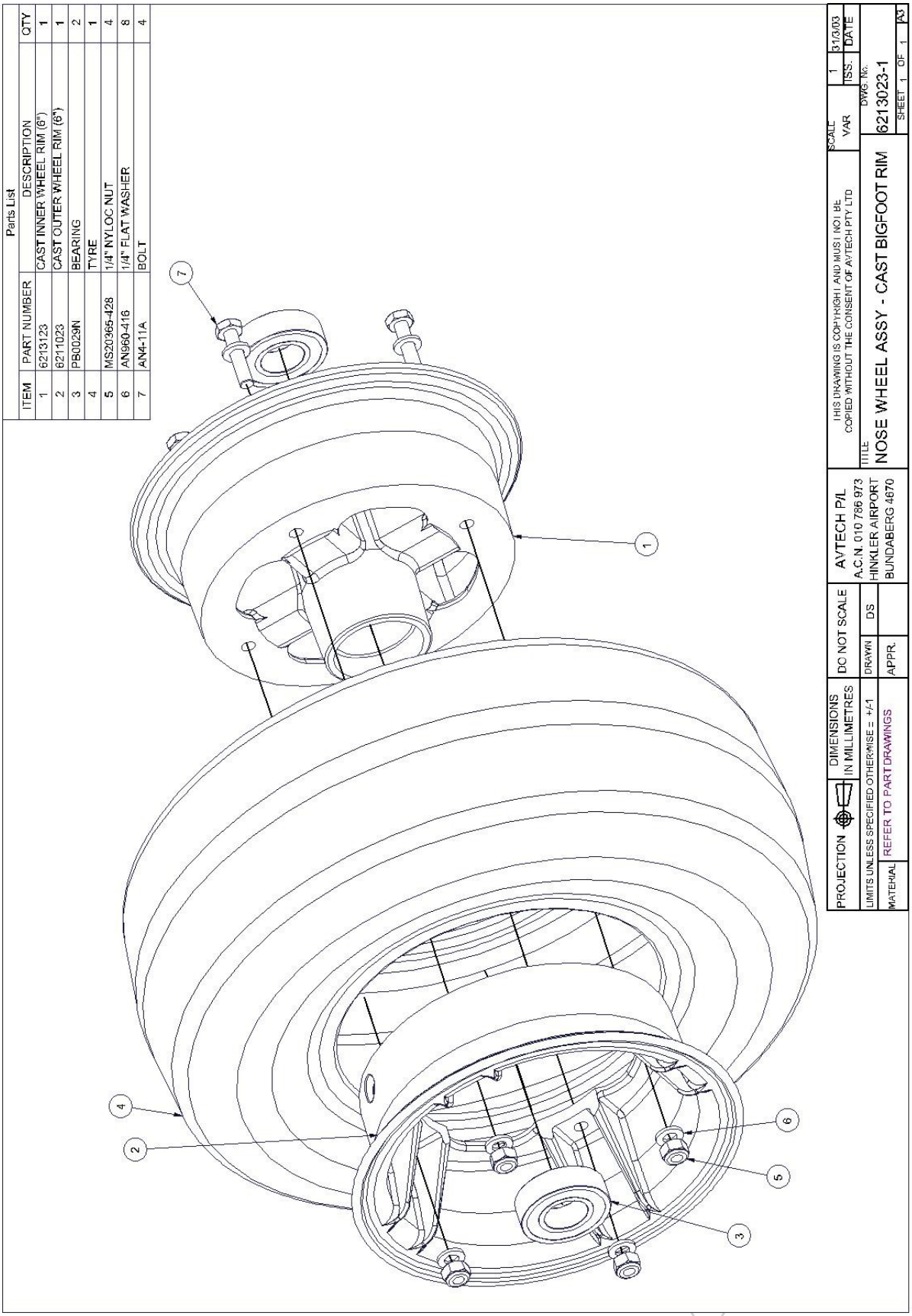
TITLE
NOSE LEG & WHEEL ASSY - MACHINED YOKE, BIG FOOT
SCALE VAR
DWG. No. 6A002A0D-4
ISS. 1
DATE 8/5/03
SHEET 1 OF 2 A3
DM 4 02/03/04
DS 3 3/10/03
DS 2 16/6/03
ISSUE 3: SHOWS NEW BEND IN LEG, MODIFIED YOKE.
ISSUE 4: ADD YOKE & COLLAR TO LEG ASSY. CHANGE BOLT LENGTHS

Figure 14. Nose Leg Assy


Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 6213123 | CAST INNER WHEEL RIM (6") | 1
2 | 6211023 | CAST OUTER WHEEL RIM (6") | 1
3 | PB0029N | BEARING | 2
4 | | TYRE | 1
5 | MS20365-428 | 1/4" NYLOC NUT | 4
6 | AN960-416 | 1/4" FLAT WASHER | 8
7 | AN4-11A | BOLT | 4
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DC NOT SCALE
DIMENSIONS IN MILLIMETRES
PROJECTION
LIMITS UNLESS SPECIFIED OTHERWISE = +/-1
MATERIAL REFER TO PART DRAWINGS

Figure 15. Nose Wheel Hub Assembly

6.7 NOSE WHEEL STEERING SYSTEM

6.7.1 5.7.1 STEERING CENTRING ASSEMBLY

The Nosewheel Centring Assembly consists of springs which are compressed when the nose leg is moved to the left or the right. Repair is limited to replacement of parts.

6.7.2 NOSE WHEEL STEERING ASSEMBLY

Refer to Figure 15.

The Nosewheel Steering Assembly comprises of two Steering push rods attaching the Rudder Pedals and the Steering Link.

Repair is limited to the replacement of parts.

6.8 BRAKE SYSTEM

The hydraulic brake system consists of one master cylinder located between the seats in the main longitudinal beam, flexible hoses connecting the master cylinder to each wheel brake cylinder and the single disc, floating-cylinder type brake assembly, located at each main landing gear wheel.

6.8.1 TROUBLE SHOOTING - BRAKES

Table 7. Trouble Shooting – Brakes

Trouble	Probable Cause	Remedy
Dragging brakes	Brake handle binding	Check and adjust
	Worn or broken master cylinder piston return spring	Repair or install new master cylinder
	Restriction in hydraulic lines or in master cylinder	Drain brake line, clear with compressed air. If cleaning lines fails, the master cylinder may be faulty and should be repaired or replaced.
Brakes fail to operate	Leak in system	If master cylinder or wheel cylinders are leaking, repair or install new parts.
	Air in system	Bleed system
	Lack of fluid in master cylinder	Fill and bleed system
	Master cylinder defective	Repair or install new parts
	Brake pads worn	Replace with new parts

6.8.2 BRAKE MASTER CYLINDER

The brake master cylinder, located between the seats on the front of the main longitudinal beam, is actuated by applying rearward pressure to the brake handle. A small reservoir is incorporated into the master cylinder for the fluid supply.

6.8.2.1 BRAKE MASTER CYLINDER REMOVAL & INSTALLATION

1. Remove the flexible hose from one wheel brake assembly and drain the hydraulic fluid from the brake system.
2. Unbolt pushrod & remove brake handle.
3. Disconnect flexible hose at master cylinder.
4. Unbolt master cylinder retaining bolts (2).
5. Plug or cap hydraulic fittings and hoses to prevent the entry of foreign material.
6. Reverse the preceding steps to install brake master cylinder, then fill and bleed brake system in accordance with Paragraph 6.8.5.

6.8.2.2 BRAKE MASTER CYLINDER REPAIR

Figure 19 may be used as a guide during disassembly, repair and reassembly of the brake master cylinder.

Repair is limited to installation of new parts, cleaning and adjustment. Use only automotive brake fluid. DO NOT use aircraft grade hydraulic fluid or damage will result.

6.8.3 HYDRAULIC BRAKE LINES

These lines are flexible hoses connected through a tee-piece.

Repair is limited to replacement.

6.8.4 WHEEL BRAKE ASSEMBLIES

The Wheel Brake Assemblies use a disc which is attached to the main wheel hub with through-bolts and a floating brake assembly (Refer to Figure 18 for caliper details, Figure 12 for installation of the caliper to the leg).

6.8.4.1 REMOVAL

The Wheel brake assemblies can be removed by disconnecting the brake hose and unbolting the brake cylinder from the backing plate. The brake disc is removed after the wheel is removed and disassembled. Refer to Figure 18 for disassembly of either wheel brake assembly.

6.8.4.2 WHEEL BRAKE INSPECTION AND REPAIR

1. Clean all parts except brake linings in dry cleaning solvent and dry thoroughly.

2. New piston sealing O-Rings should be installed each time the brakes are disassembled. If re-use is necessary, they should be wiped with a clean cloth saturated in automotive brake fluid and inspected for damage.

NOTE:
Thorough cleaning is important. Dirt and chips are the greatest single cause of malfunctions and leaks in hydraulic brake systems.

3. Check brake linings for deterioration or excessive wear.

4. Inspect brake cylinder bore for scoring. A scored cylinder will leak or cause rapid bucket wear. If wear is evident, install a new brake cylinder.

5. If the anchor bolts on the brake assembly are nicked or gouged, replace with new bolts.

6. Inspect wheel brake disc for a minimum thickness of 2mm. If brake disc is below minimum thickness, install a new part.

6.8.4.3 WHEEL BRAKE INSTALLATION

1. Place brake cylinder assembly in position on backing plate.

2. Install bolts, springs, outboard pad and nuts/washers.

3. Reconnect flexible hose.

4. Fill master cylinder reservoir with brake fluid.

5. Bleed brakes – Refer to Paragraph 6.8.5.

6.8.4.4 BRAKE LINING INSTALLATION

New brake linings should be installed when the existing linings are worn to expose the rivet heads.

To replace outboard lining:

1. Remove bolts securing outboard brake pad and brake cylinder to backing plate.

2. Remove outboard brake pad.

3. Place brake pad on a table with lining side down flat. Centre a 1/8" (or slightly smaller) punch on the rolled rivet and hit the punch sharply with a hammer. Punch out all rivets securing the lining to the pad plate.

NOTE:
A replacement kit for brake pads and rivets is available from JABIRU

4. Clamp the flat side of an anvil in a vice.

5. Align the new lining on the pad plate and place the brake rivet in the hole with the rivet head in the lining. Place the head against the anvil.

6. Centre the rivet setting punch on the lips of the rivet. While holding the pad plate down firmly against the lining, hit punch with hammer to set the rivet. Repeat blows on the punch until the lining is firmly against the pad plate.

7. Realign the lining of the pad plate and install and set rivets in the remaining holes.

8. Replace the brake pad and refix with through-bolts and springs.

To replace inboard lining:

1. Remove wheel assembly – see Paragraph 6.4.1.

2. Remove stub axle – see Paragraph 6.4.5.

3. Remove brake cylinder backing plate.

4. Replace lining in accordance with steps 3-7 above.

5. Install axle and wheel assembly – see Paragraph 6.4.6.

6. Install outboard brake pad and refix with through-bolts and springs.

6.8.5 BRAKE SYSTEM BLEEDING

1. Fill the brake master cylinder with automotive brake fluid.

2. Loosen the bleed nipple at the brake cylinder.

3. Pull the handbrake back to the rear stop & hold in same position until nipple has been re torque. Release the hand brake & repeat step 3 until all air is expelled from lines.

NOTE:
Ensure brake master cylinder remains full above the outlet hose.

4. When air is fully expelled, tighten bleed nipples & check fittings for leaks.

5. Repeat steps 1-4 for other side brake.

WARNING

Use only automotive brake fluid. DO NOT use aircraft hydraulic fluid or damage will result.

6.8.6 BRAKE PAD ADJUSTMENT

Brake Pads may be adjusted by removing the Main Wheel Spats and tightening the brake pad attaching bolts and nuts until the wheel just rotates freely.

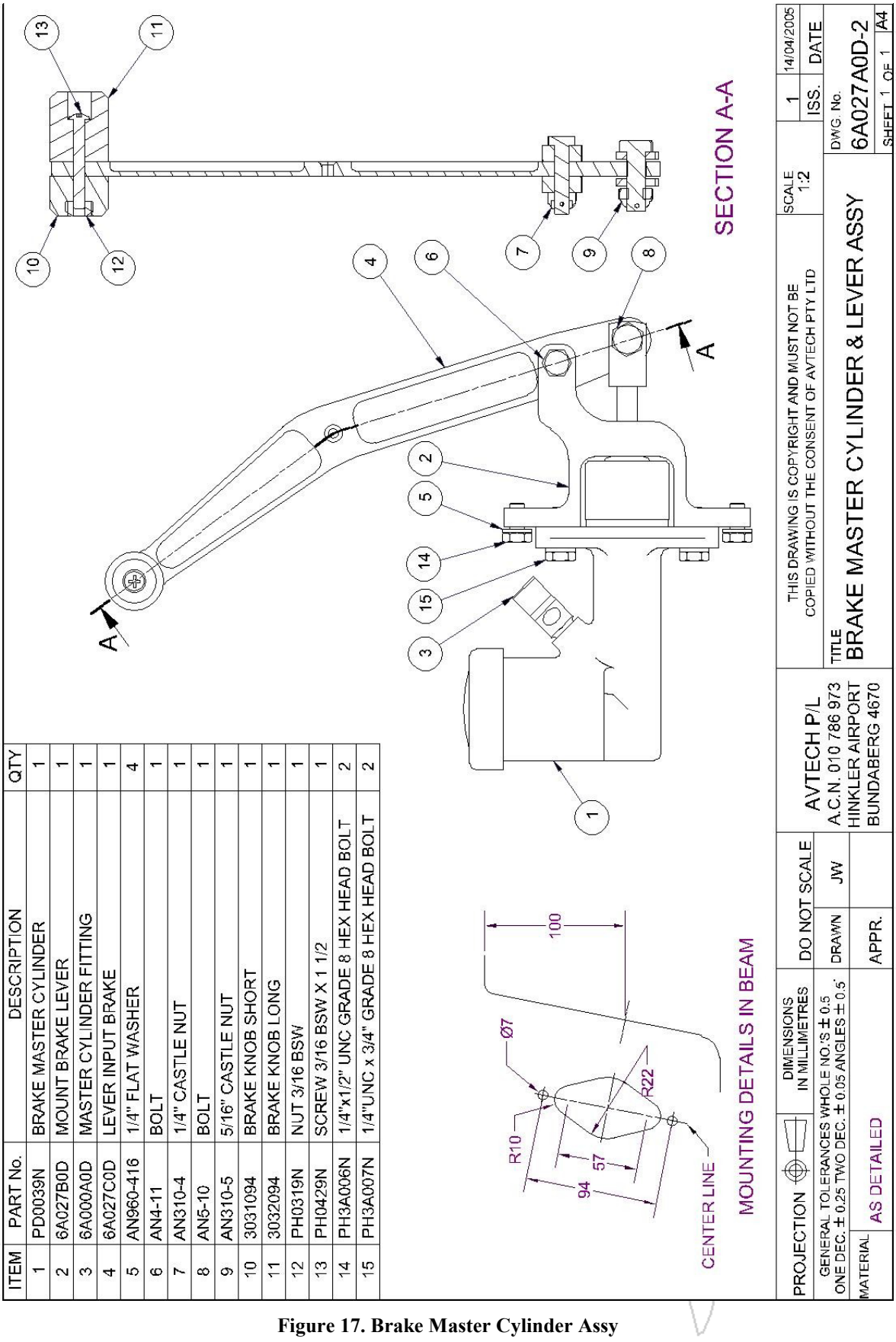
6.8.7 PARKING BRAKE

The Parking Brake consists of an over centre cam on the brake handle. Should the cam have insufficient travel for the brakes to hold the aircraft with a propeller thrust of 2500rpm, adjust by one or all of the following:

1. Adjust brakes as described in Paragraph 6.8.6.

2. Bleed air from brake system as described in Paragraph 5.8.5.

Figure 16. Brake Calliper Assy



ITEM	PART No.	DESCRIPTION	QTY
1	PD0039N	BRAKE MASTER CYLINDER	1
2	6A027B0D	MOUNT BRAKE LEVER	1
3	6A000A0D	MASTER CYLINDER FITTING	1
4	6A027C0D	LEVER INPUT BRAKE	1
5	AN960-416	1/4" FLAT WASHER	4
6	AN4-11	BOLT	1
7	AN310-4	1/4" CASTLE NUT	1
8	AN5-10	BOLT	1
9	AN310-5	5/16" CASTLE NUT	1
10	3031094	BRAKE KNOB SHORT	1
11	3032094	BRAKE KNOB LONG	1
12	PH0319N	NUT 3/16 BSW	1
13	PH0429N	SCREW 3/16 BSW X 1 1/2	1
14	PH3A006N	1/4"x1/2" UNC GRADE 8 HEX HEAD BOLT	2
15	PH3A007N	1/4"UNC x 3/4" GRADE 8 HEX HEAD BOLT	2

Figure 17. Brake Master Cylinder Assy

7 SECTION 7 - AILERON CONTROL SYSTEM

7.1 AILERON CONTROL SYSTEM

Refer to Figure 20.

The aileron control system is comprised of a control column and two enclosed push-pull cables fitted with spherical bearings.

WARNING

All spherical bearings must be fitted with a large washer on the outside of the through-bolt to prevent the bearing case and cable releasing in the event of a bearing failure. See Figure 20.

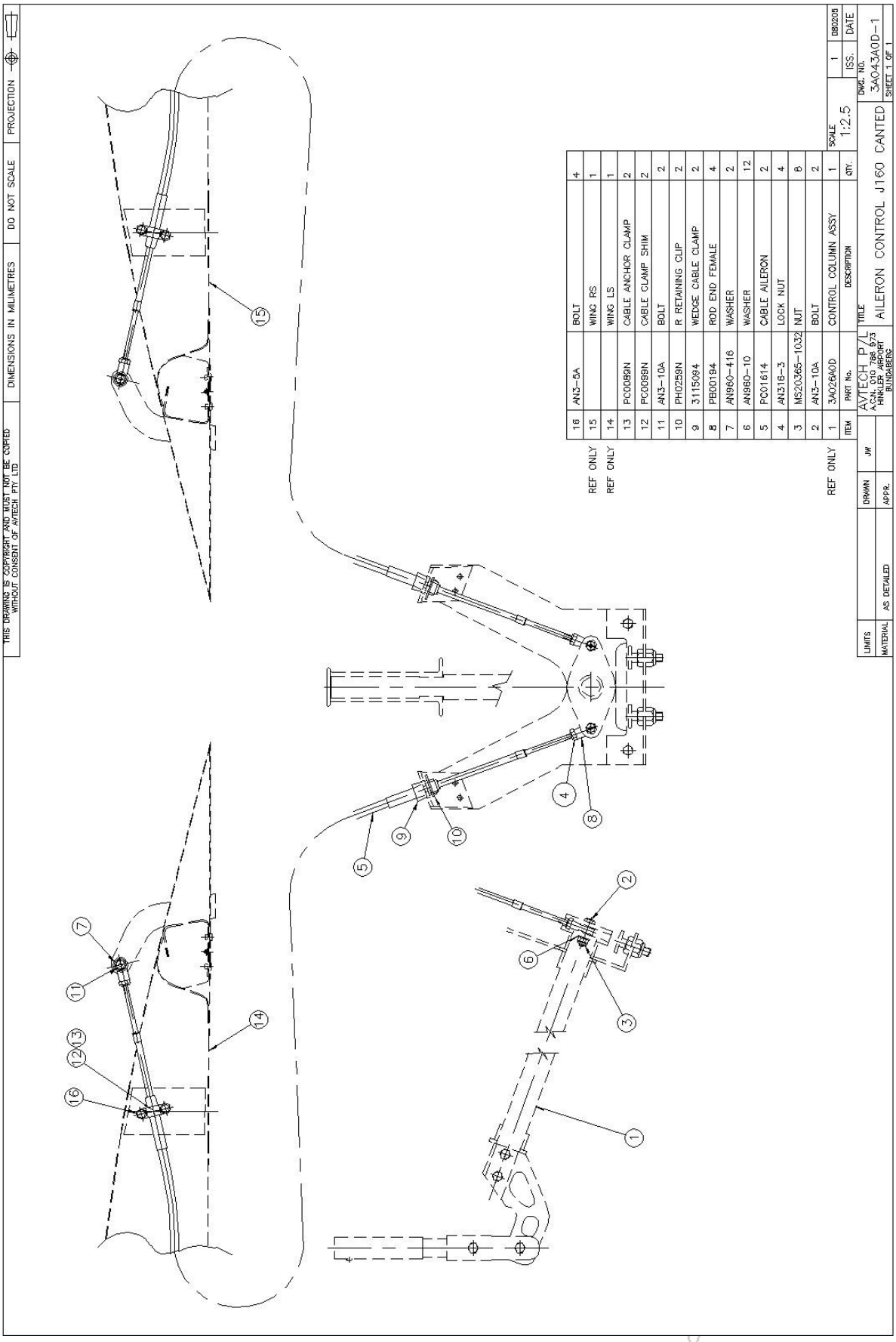


Figure 18. Aileron System Schematic

7.2 CONTROL COLUMN

Refer to Figure 21.

7.2.1 CONTROL COLUMN REMOVAL & INSTALLATION

The Control Column is a Primary Control and may not be removed or repaired without reference to JABIRU AIRCRAFT Pty Ltd or our local approved agent.

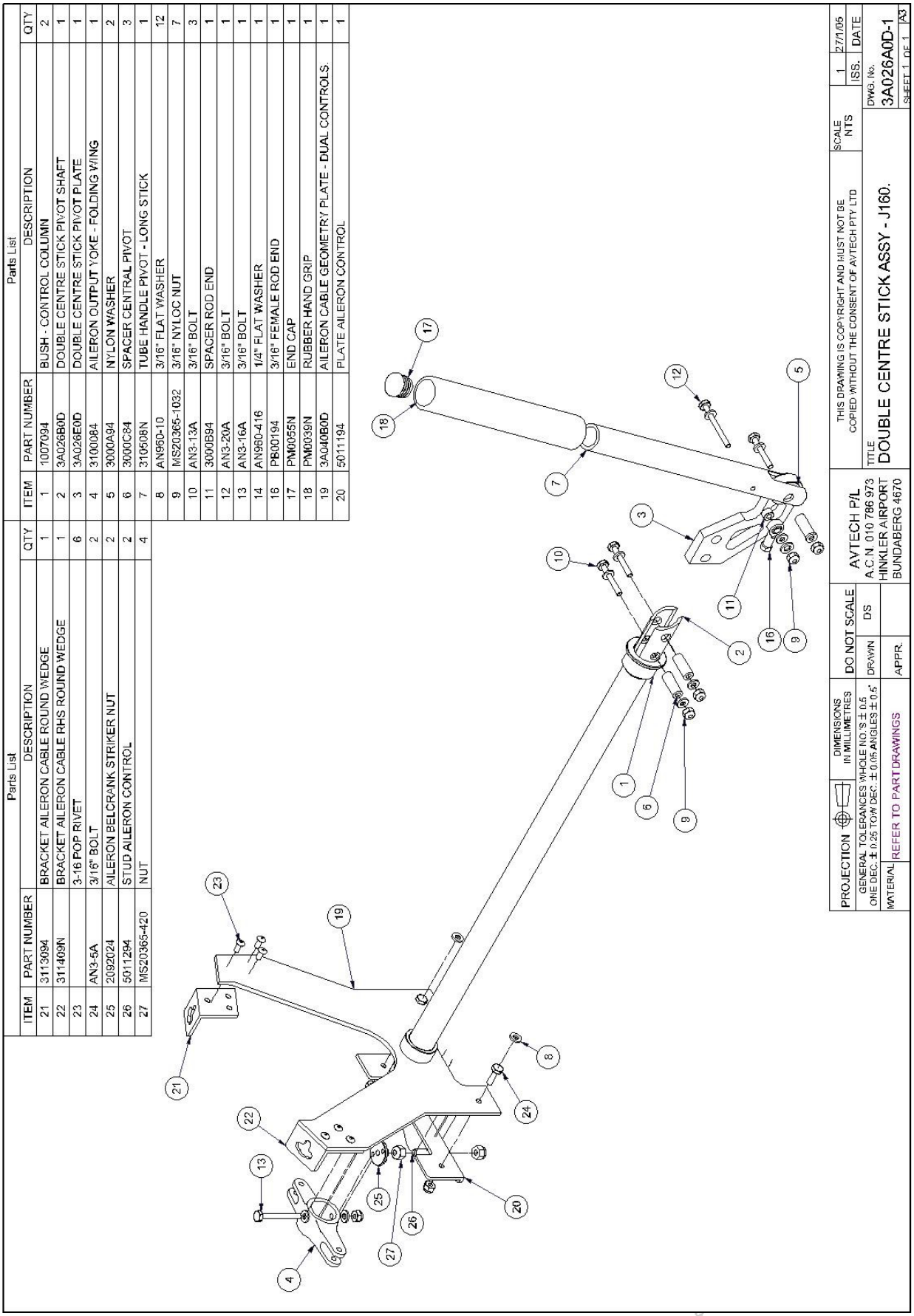

Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
21 | 3113094 | BRACKET AILERON CABLE ROUND WEDGE | 1
22 | 3114094N | BRACKET AILERON CABLE RHS ROUND WEDGE | 1
23 | | 3-16 POP RIVET | 6
24 | AN3-5A | 3/16" BOLT | 2
25 | 2092024 | AILERON BELCRANK STRIKER NUT | 2
26 | 5011294 | STUD AILERON CONTROL | 2
27 | MS20365-420 | NUT | 4
Parts List
ITEM | PART NUMBER | DESCRIPTION | QTY
1 | 1007094 | BUSH - CONTROL COLUMN | 2
2 | 3A026B0D | DOUBLE CENTRE STICK PIVOT SHAFT | 1
3 | 3A026E0D | DOUBLE CENTRE STICK PIVOT PLATE | 1
4 | 3100084 | AILERON OUTPUT YOKE - FOLDING WING | 1
5 | 3000A94 | NYLON WASHER | 2
6 | 3000C84 | SPACER CENTRAL PIVOT | 3
7 | 310508N | TUBE HANDLE PIVOT - LONG STICK | 1
8 | AN960-10 | 3/16" FLAT WASHER | 12
9 | MS20365-1032 | 3/16" NYLOC NUT | 7
10 | AN3-13A | 3/16" BOLT | 3
11 | 3000B84 | SPACER ROD END | 1
12 | AN3-20A | 3/16" BOLT | 1
13 | AN3-16A | 3/16" BOLT | 1
14 | AN960-416 | 1/4" FLAT WASHER | 1
16 | PB00194 | 3/16" FEMALE ROD END | 1
17 | PM0055N | END CAP | 1
18 | PM0039N | RUBBER HAND GRIP | 1
19 | 3A040B0D | AILERON CABLE GEOMETRY PLATE - DUAL CONTROLS. | 1
20 | 5011194 | PLATE AILERON CONTROL | 1
PROJECTION
DIMENSIONS IN MILLIMETRES
GENERAL TOLERANCES WHOLE NO.'S ± 0.5 ONE DEC. ± 0.25 TOM DEC. ± 0.05 ANGLES ± 0.5°
MATERIAL
REFER TO PART DRAWINGS
DO NOT SCALE
DRAWN
DS
APPR.
AVTECH P/L
A.C.N. 010 786 973
HINKLER AIRPORT
BUNDABERG 4670
THIS DRAWING IS COPYRIGHT AND MUST NOT BE COPIED WITHOUT THE CONSENT OF AVTECH PTY LTD
TITLE
DOUBLE CENTRE STICK ASSY - J160.
SCALE NTS
DWG. No. 3A026A0D-1
ISS. 1
DATE 27/1/05
SHEET 1 OF 1
A3

Figure 19. Control Column Assy

7.3 CONTROL CABLES

Control Cables are of the enclosed push-pull type, fitted with spherical bearings at both ends.

To operate, the outer cover of the cable must be clamped firmly at each end.

7.3.1 CONTROL CABLE REMOVAL & INSTALLATION

Control Cables are Primary Control and may not be removed or repaired without reference to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

7.4 AILERONS

Ailerons comprise a moulded and bonded monocoque structure embodying a composite control horn at the outboard end.

7.4.1 AILERON REMOVAL & INSTALLATION

1. Unbolt cable from aileron control arm.

2. Loosen screws in hinge pin retainers and lift hinge pin retainer away from the hinge pin. It is not necessary to completely remove these parts.

3. Remove hinge pins.

4. Remove aileron.

5. Reverse the preceding steps for installation.

7.4.2 AILERON INSPECTION & REPAIR

Inspect ailerons for any signs of delamination or cracking. Pay particular attention to the Control Horn and hinges and their surrounding areas.

Repairs must be referred to JABIRU AIRCRAFT Pty Ltd or our approved local agent.

7.5 CONTROL RIGGING

1. With the control stick in the neutral position, use a straight-edge not less than 1 metre long. Hold the straight-edge flush on the underside of the wing aerofoil and adjust aileron to sit on the straight-edge. Make this adjustment with the cable rod-ends, ensuring that on completion the locknut is tight on the rod-ends and that cable is visible through the inspection hole in the rod-end.

2. Check UP travel on both ailerons using the Aileron Rigging Template (see Appendix 3).

3. Use the Aileron Control Stop adjustment (see Figure 22) to adjust the total aileron movement (ie. UP travel) and use cable adjustment as previously described to proportion UP and DOWN travel. The Aileron Control Stop should engage before the Aileron Arm hits the UP travel stop at the Wing Tip.

4. DO NOT move the Cable Anchors – these positions have been set using a jig.